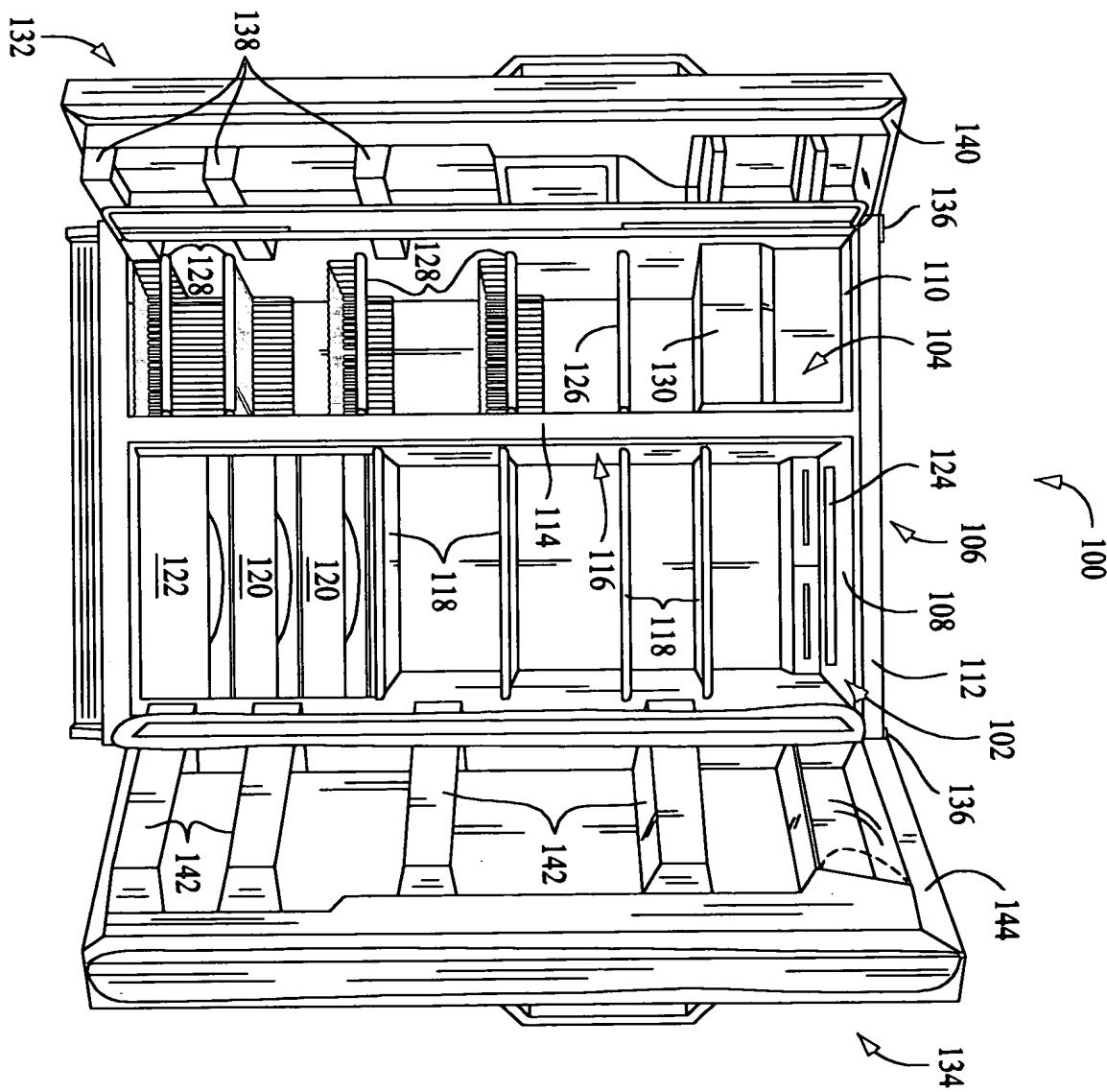


1/71



2/71

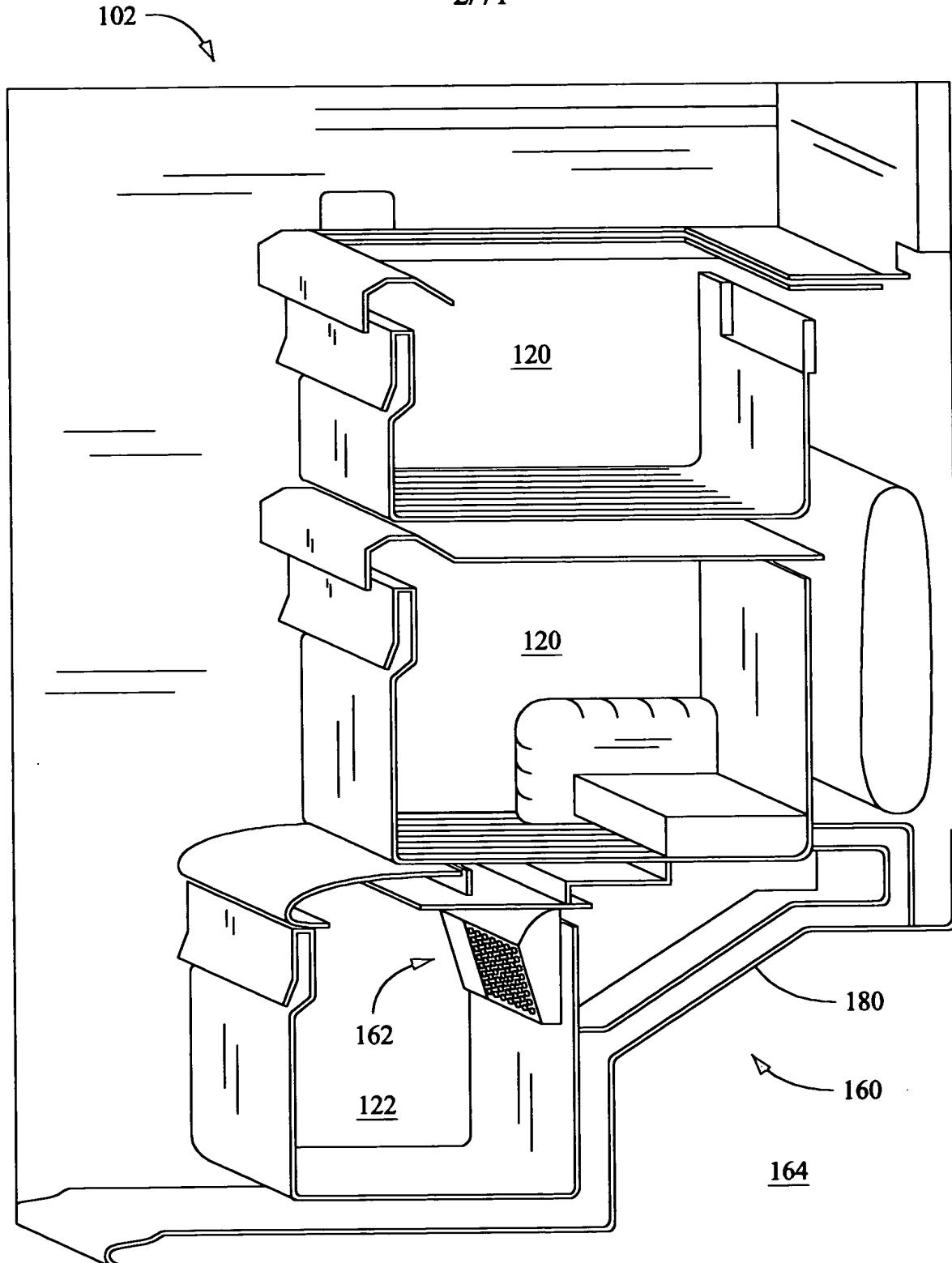


FIG. 2

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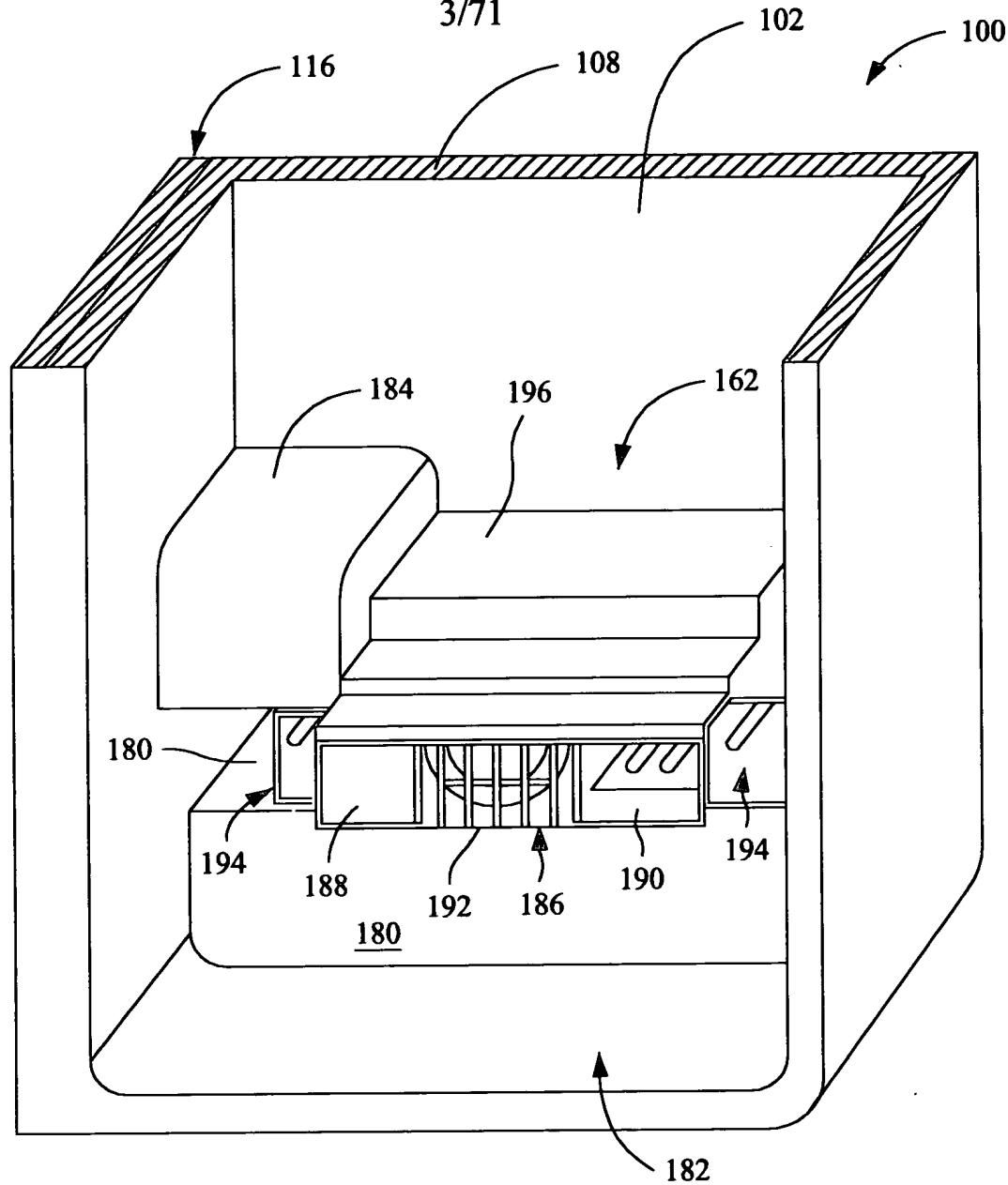


FIG. 3

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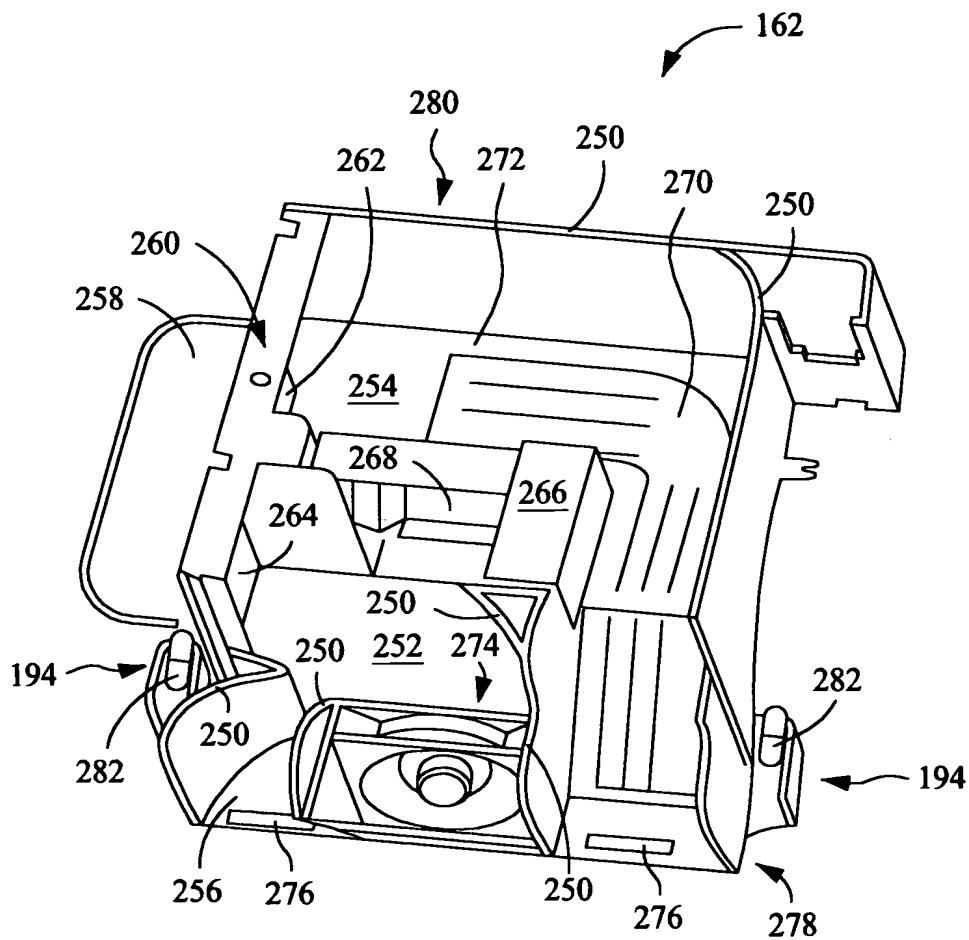


FIG. 4

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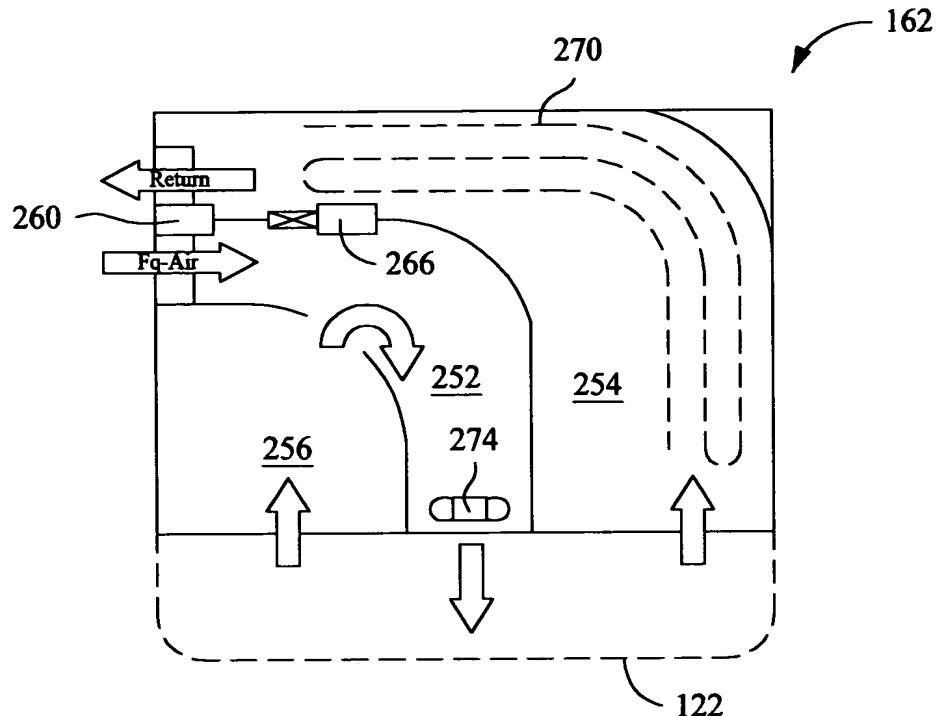


FIG. 5

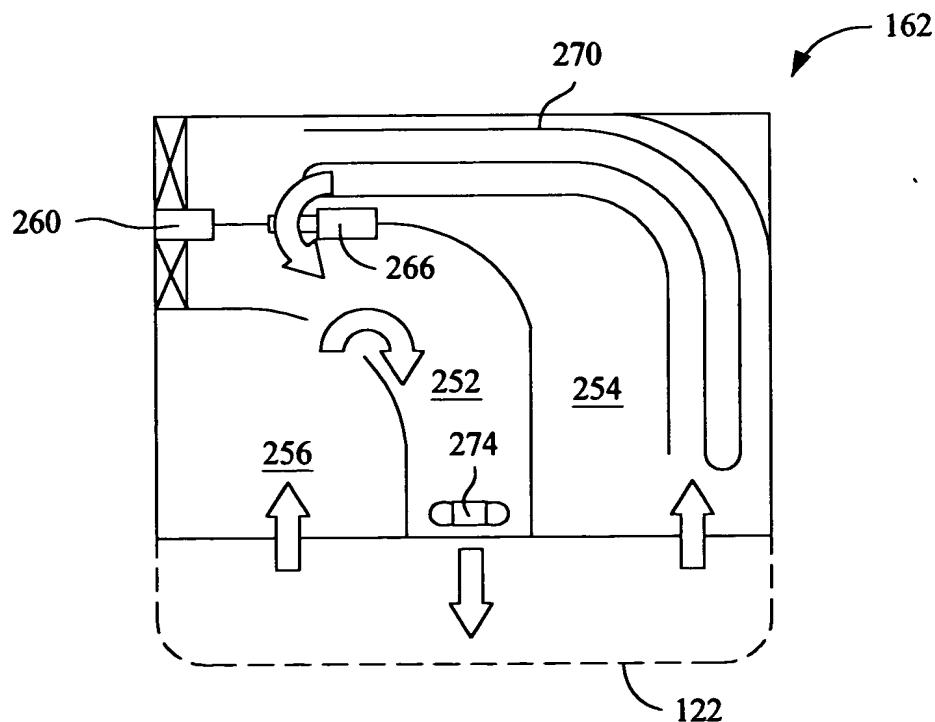


FIG. 6

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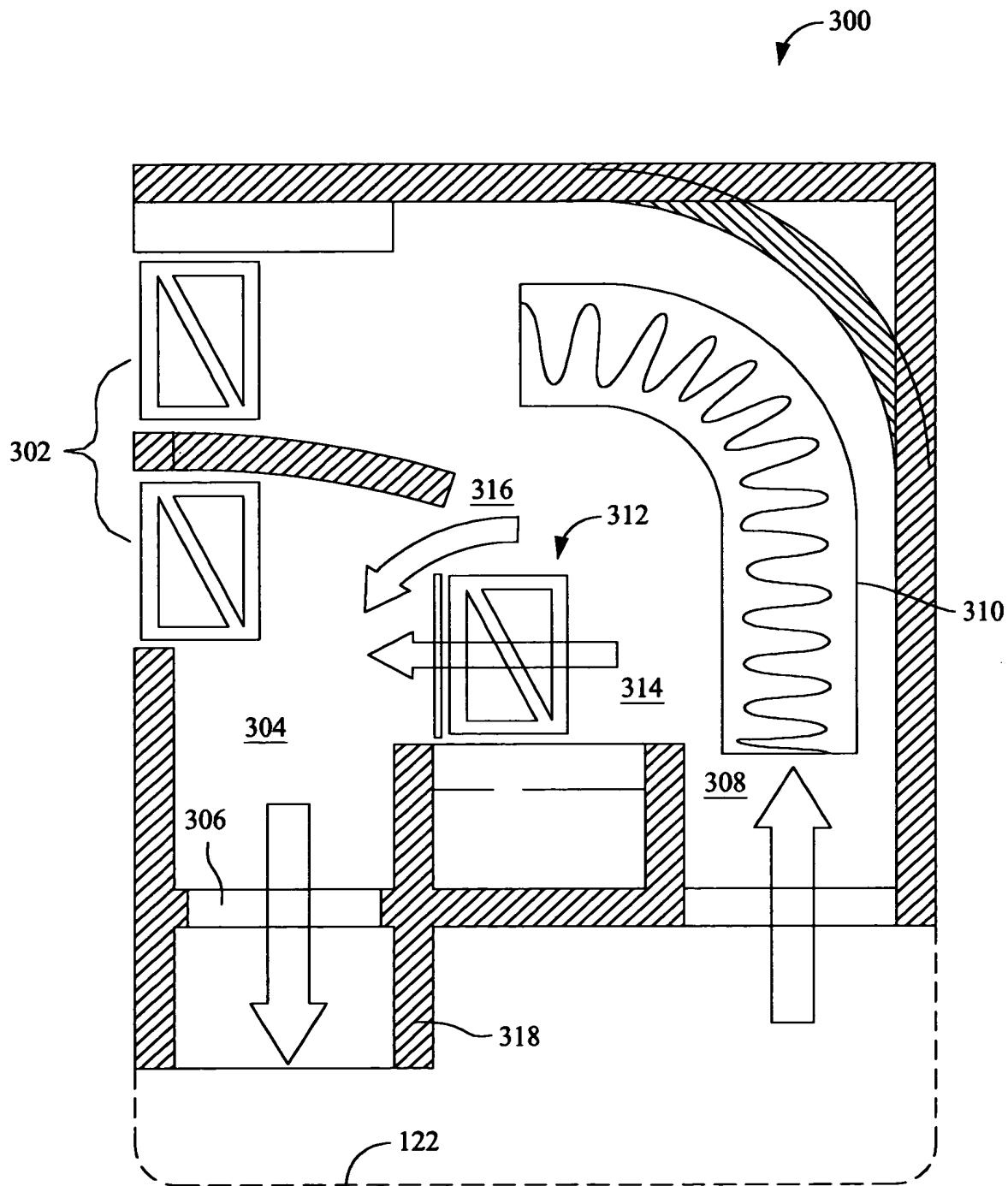
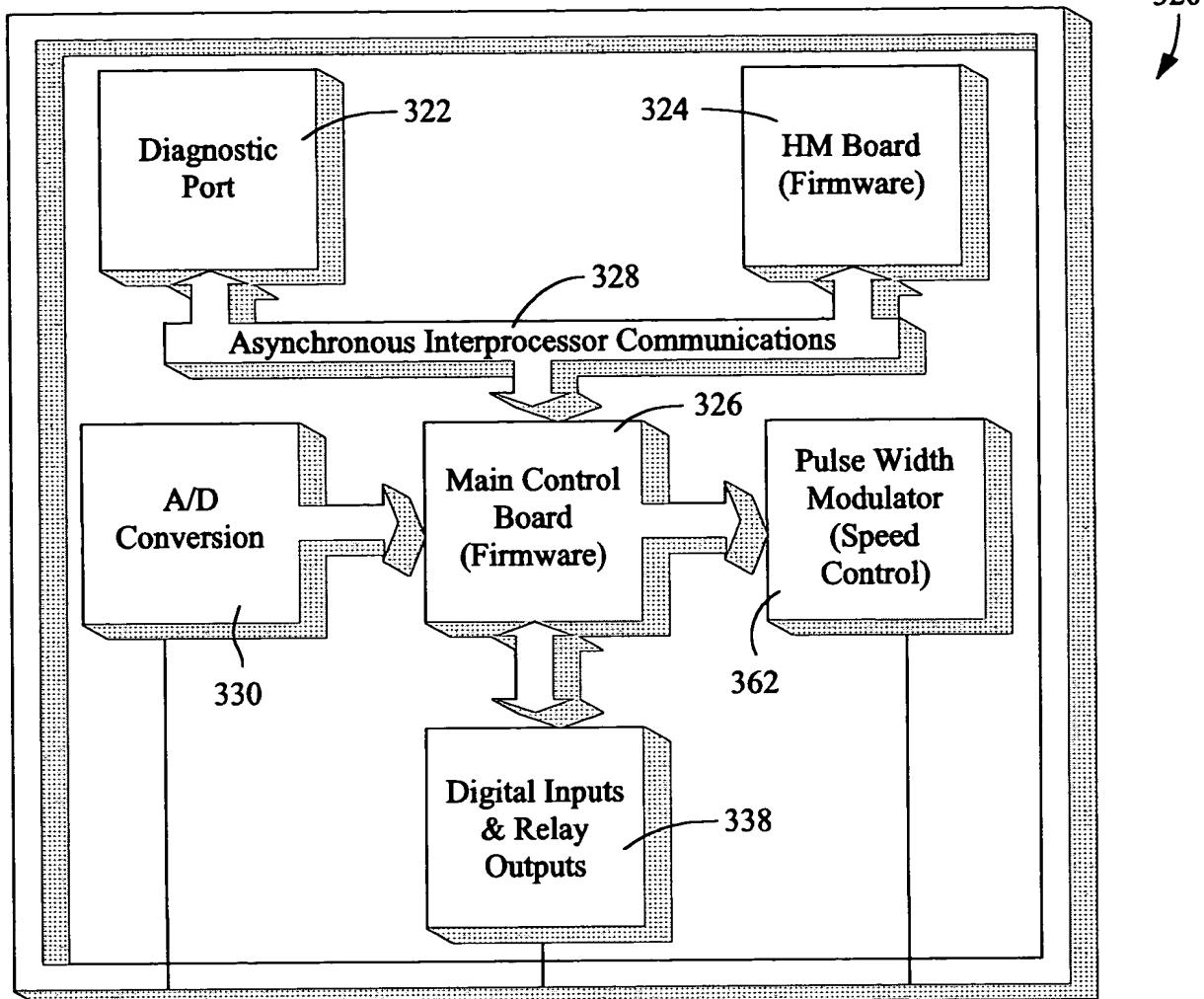


FIG. 7



- FF Temp 2—332
- FF Temp —332
- Feature Pan Temp—276
- FZ Temp —334
- Evap. Temp—336

Cond. Fan Tach.—340	Condenser
Evap. Fan Tach.—342	FF Fan
Crusher Solenoid—344	Evaporator
Auger Motor —346	Feature P
Personality Inputs (Site Specific)—348	

or Fan—364
-366
or Fan—368
Fan Fan—274

- Water Dispensor Valve—350
- Encoders for Set Points—352
- Compressor Cntl—354
- Defrost Heater—356
- Door Detector—358
- Mullion Damper 360
- Feature Pan Damper 1—260
- Feature Pan Damper 2—266
- Feature Pan Heater—270

FIG. 8

ARCHITECTURE

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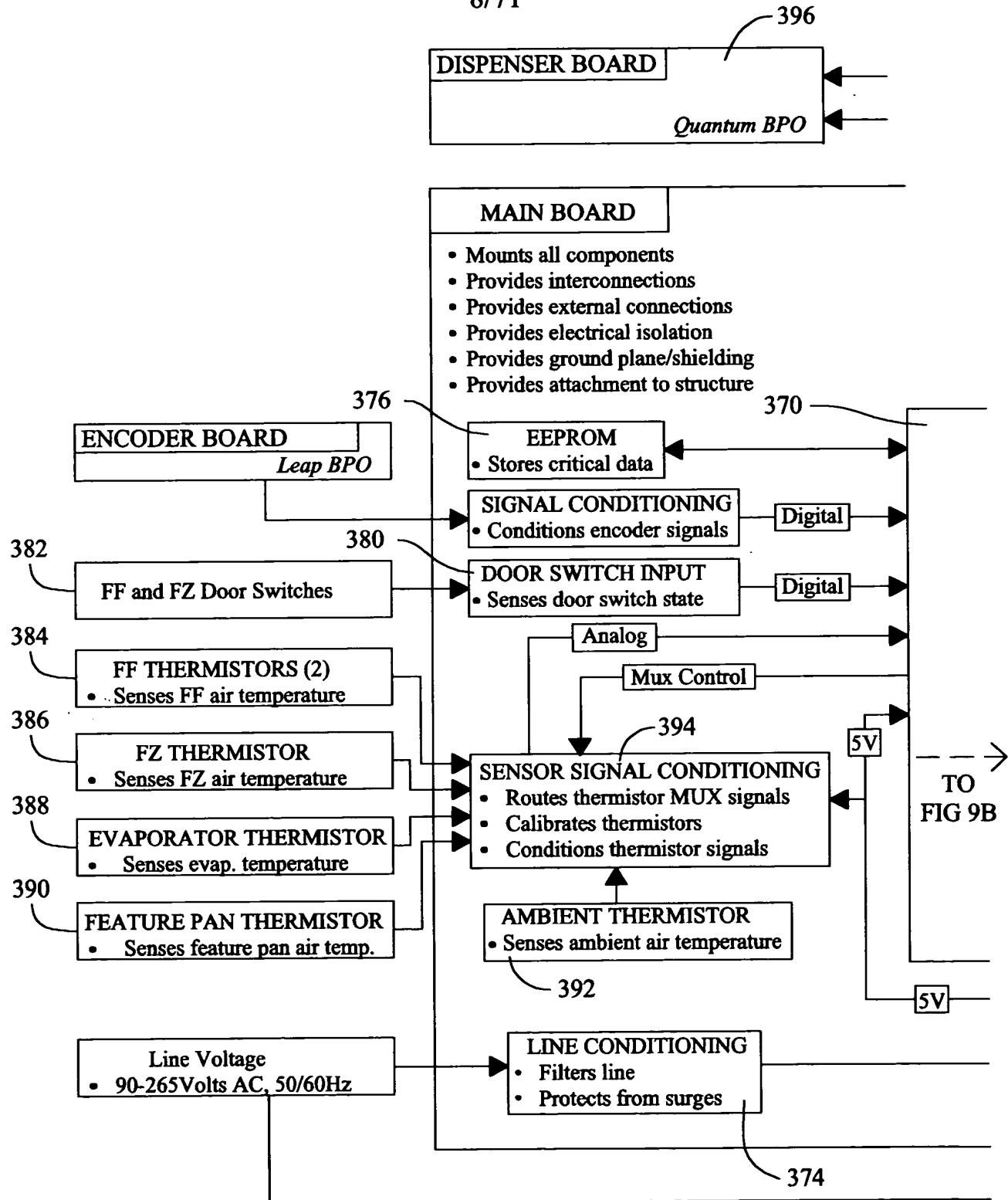
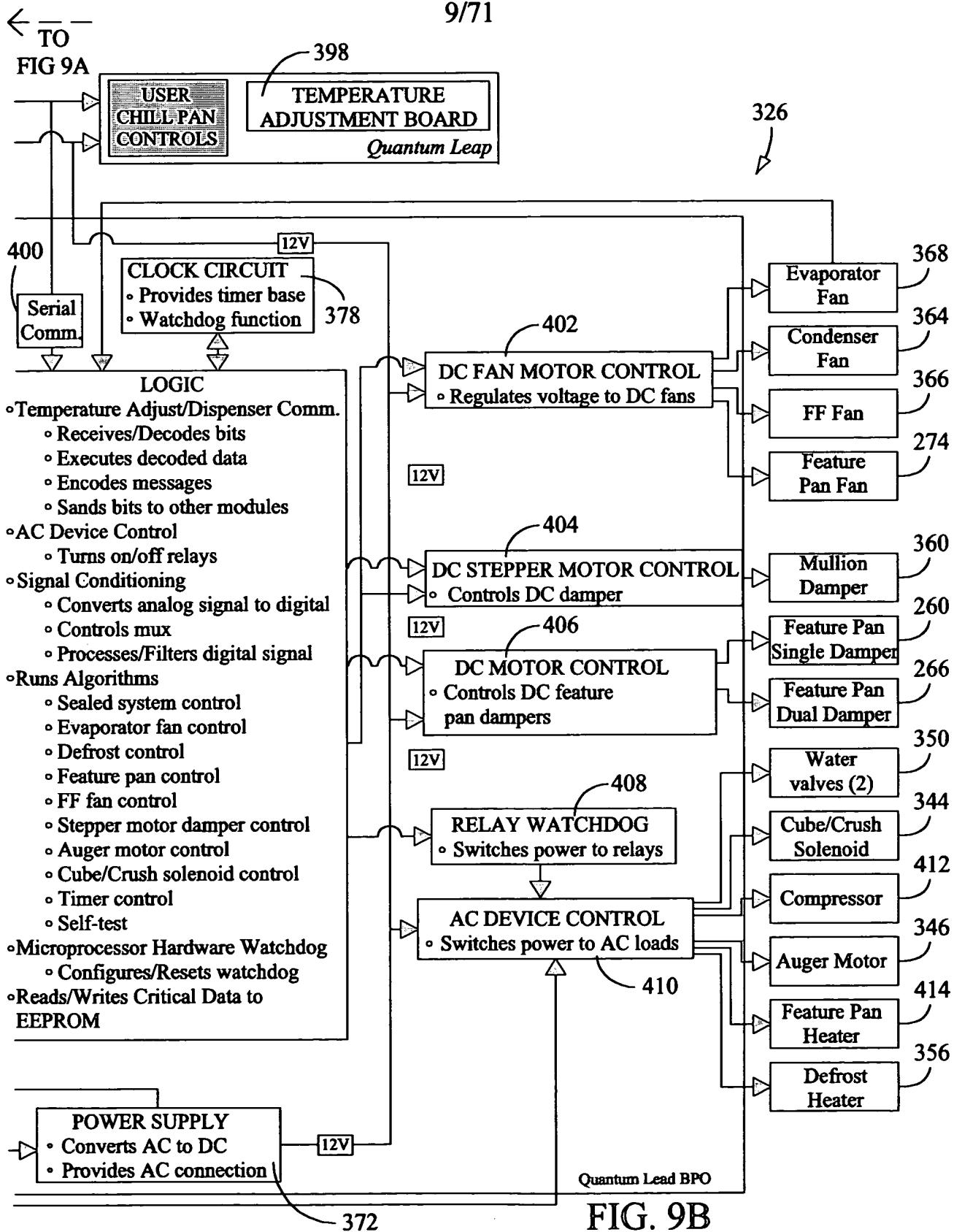


FIG. 9A

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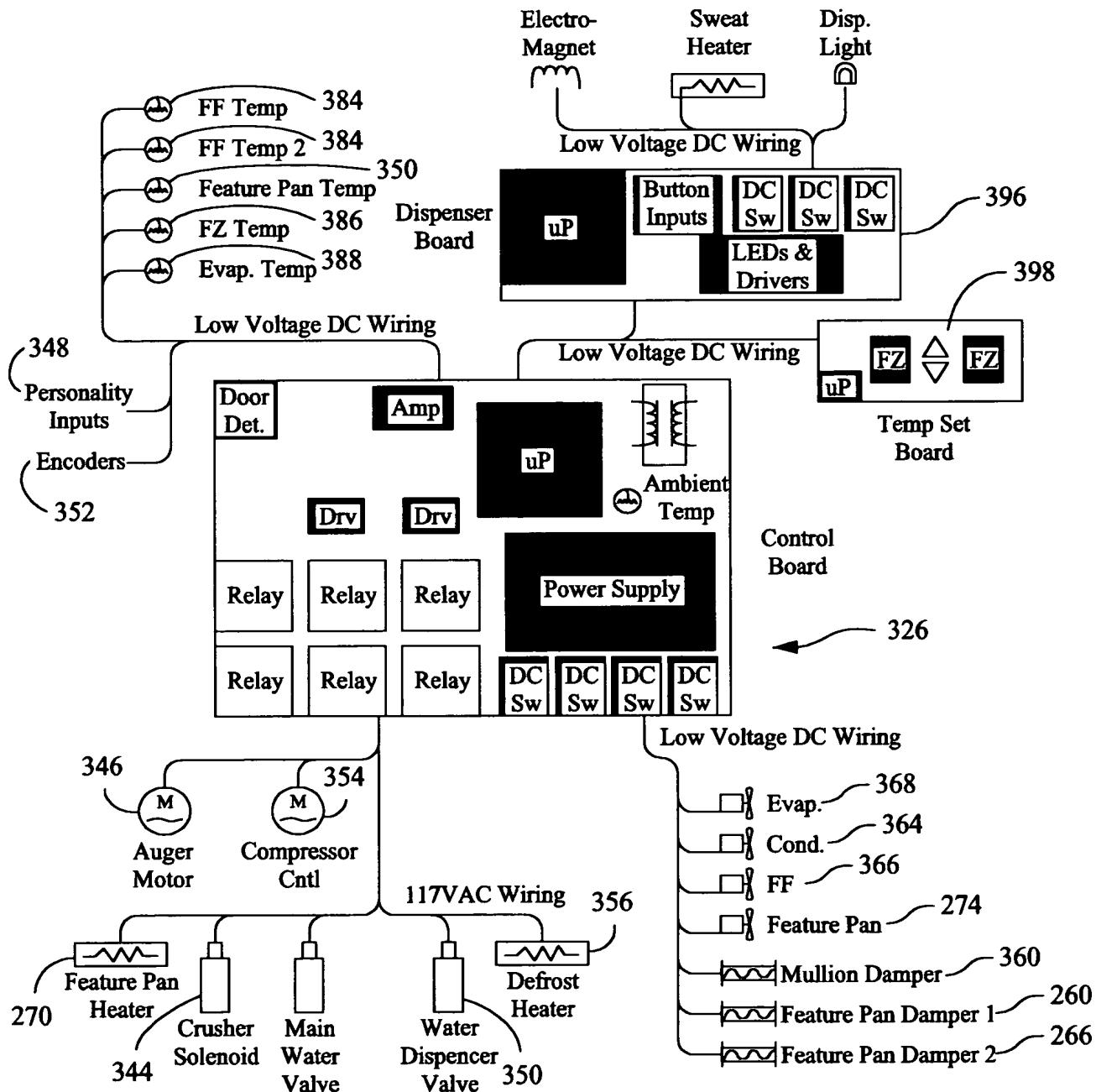


FIG. 10

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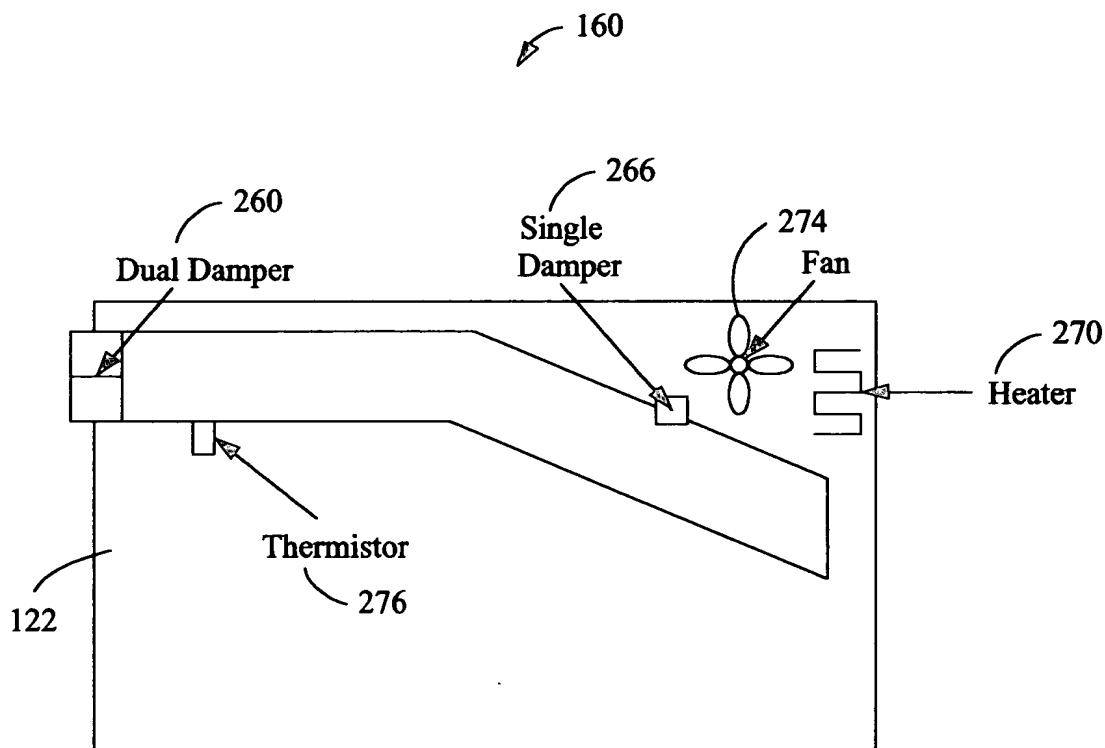


FIG. 11

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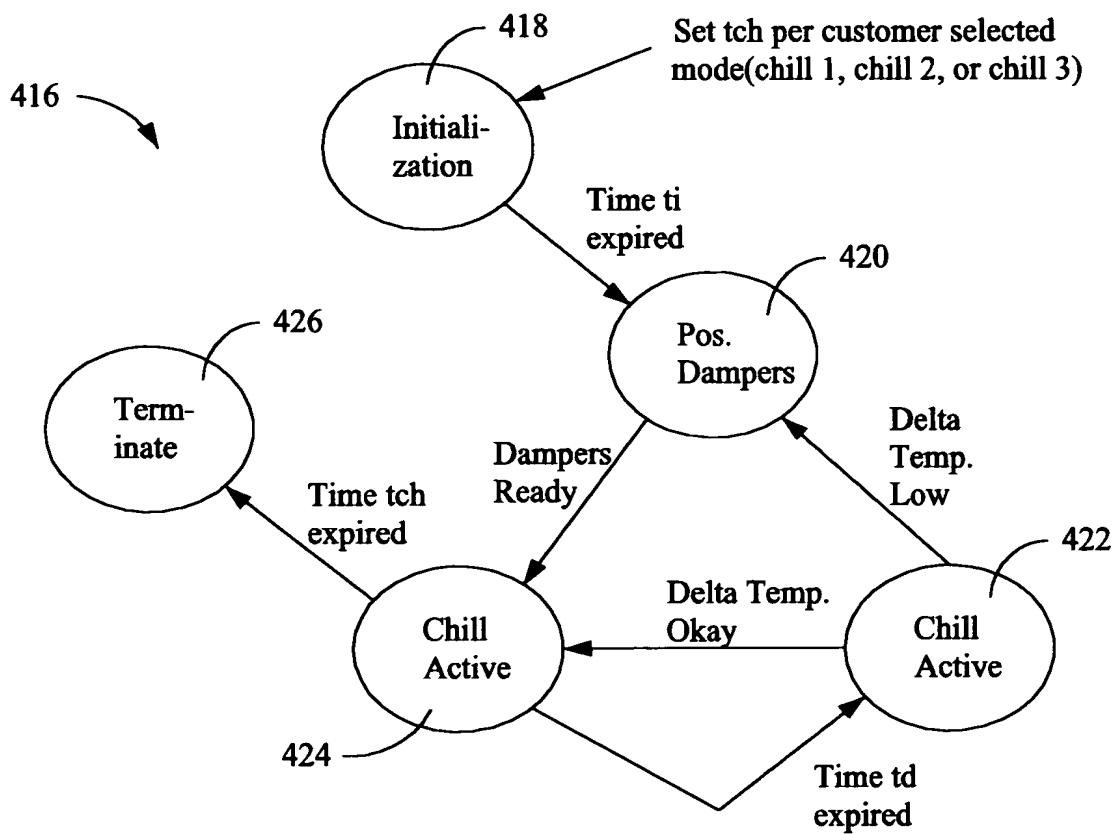
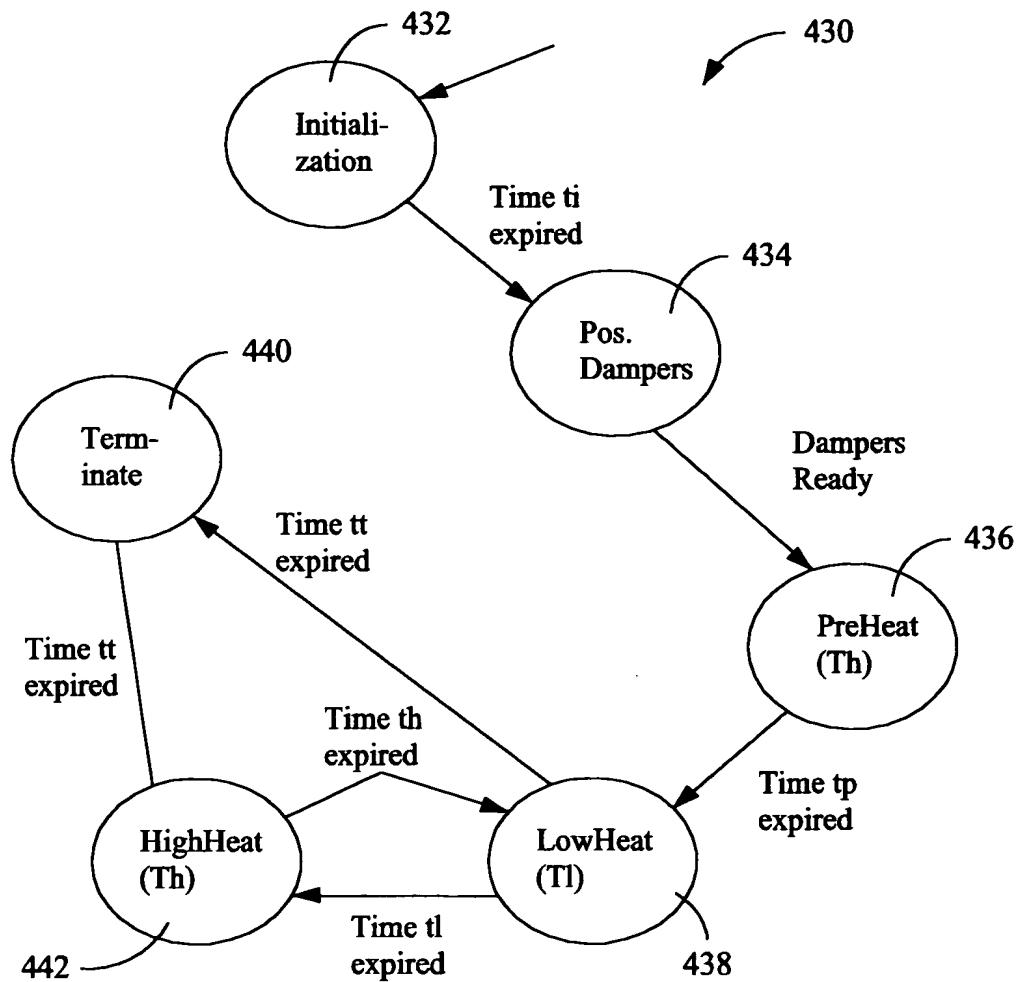


FIG. 12

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Initialization: Shuts off heater and turns on fan. This mode is implemented so that the customer interface LED that is wired in parallel with the fan will turn on as soon as the button is hit. Time ti is the initialization time and will typically be approximately one minute.

Pos. Dampers: This state shuts off the fan, sets the single damper open then closes the dual damper. It then turns the fan back on. This is done for power management

PreHeat: This state regulates the pan temperature

LowHeat

HighHeat:

Terminate: This mode closes both dampers and shuts off the fan then returns to idle.

FIG. 13

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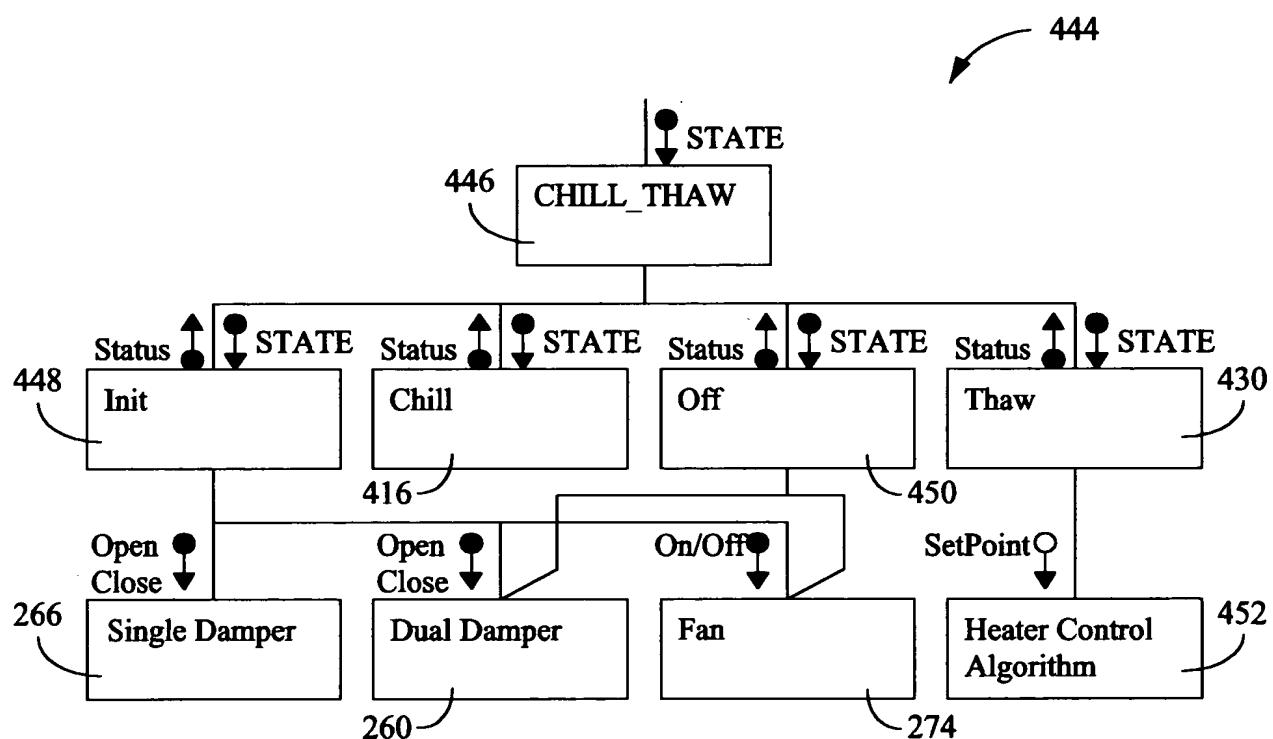


FIG. 14

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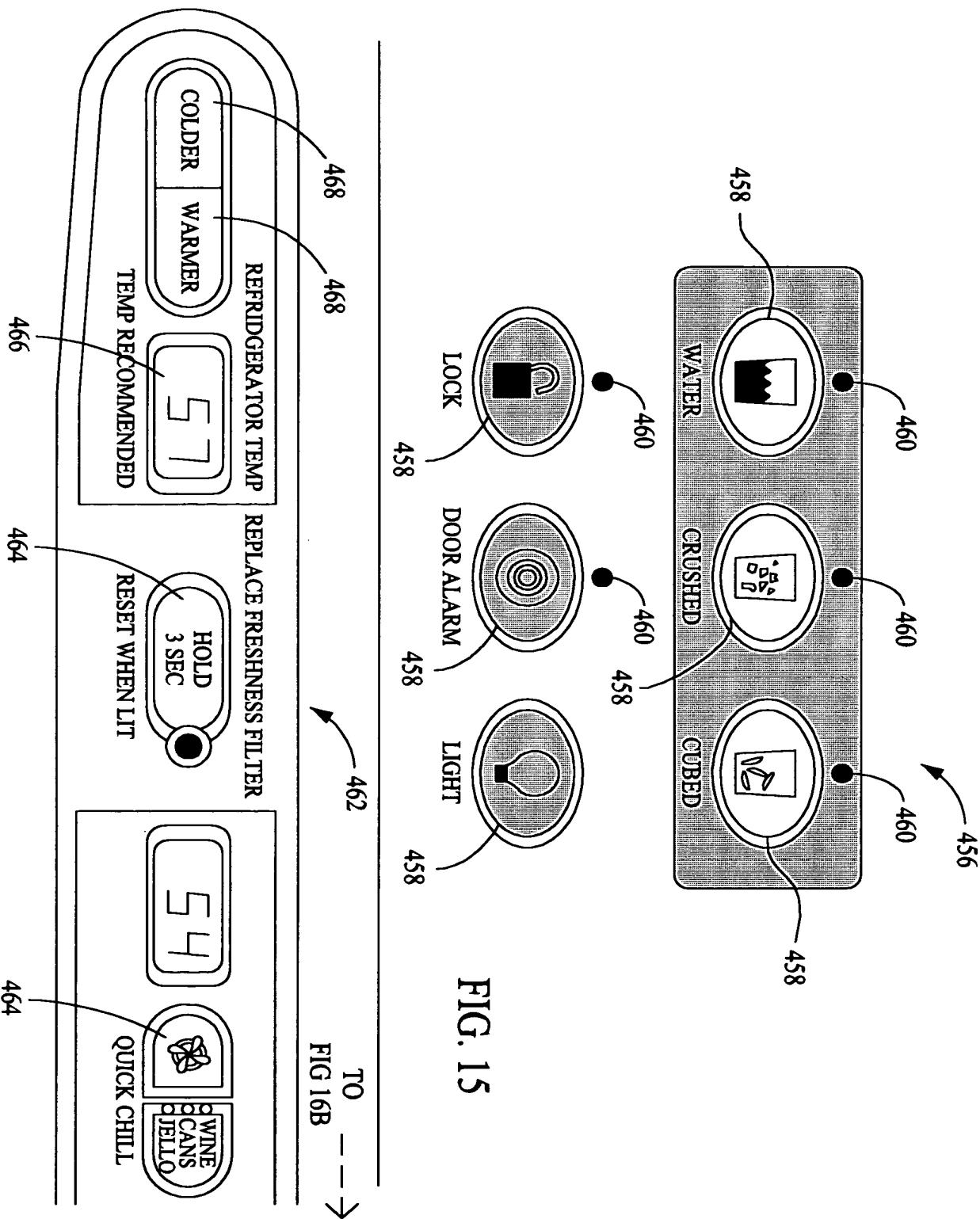


FIG. 16A

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<-- TO
FIG 16A

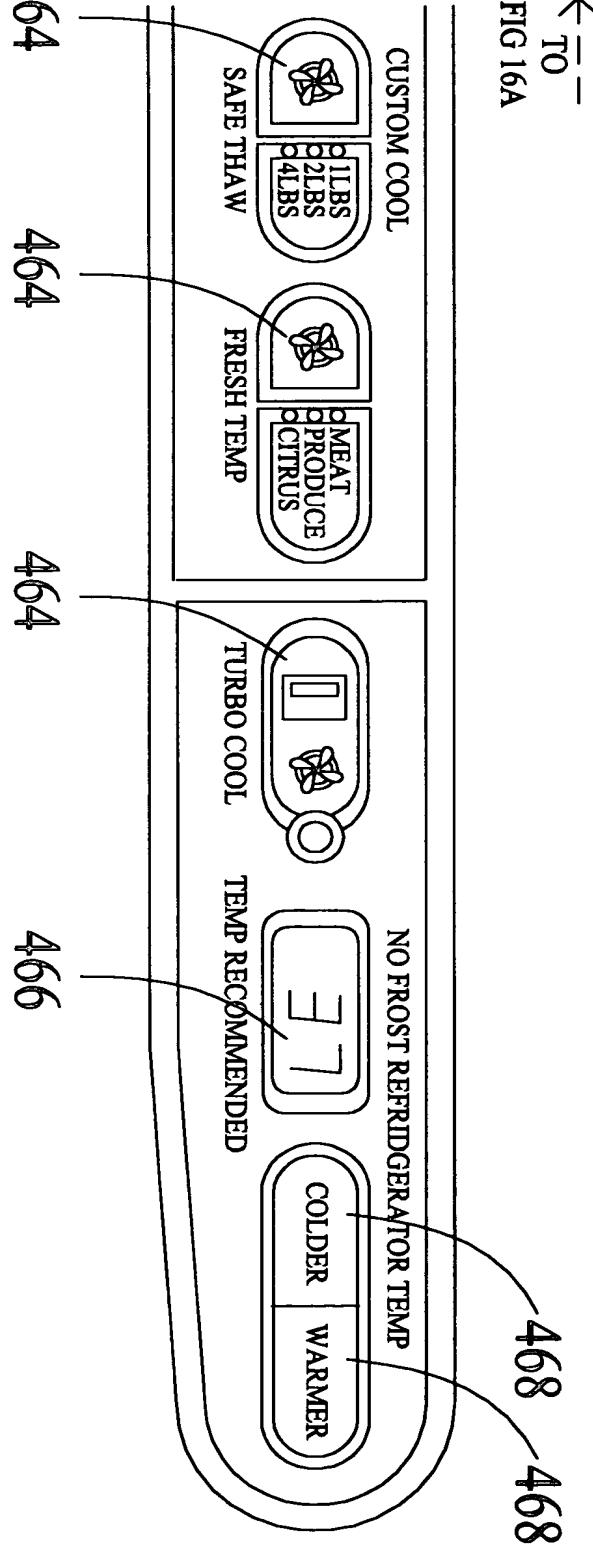


FIG. 16B

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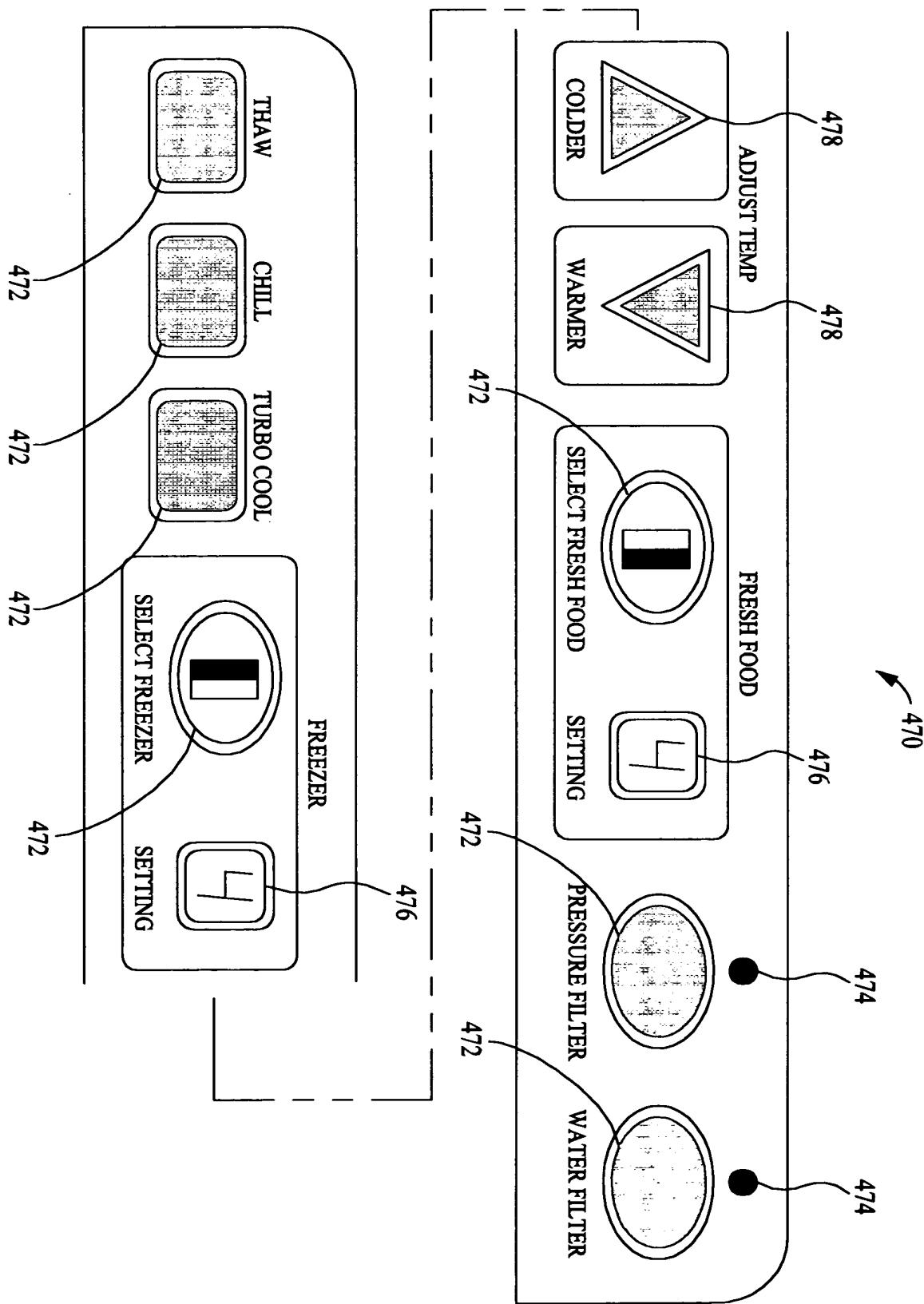
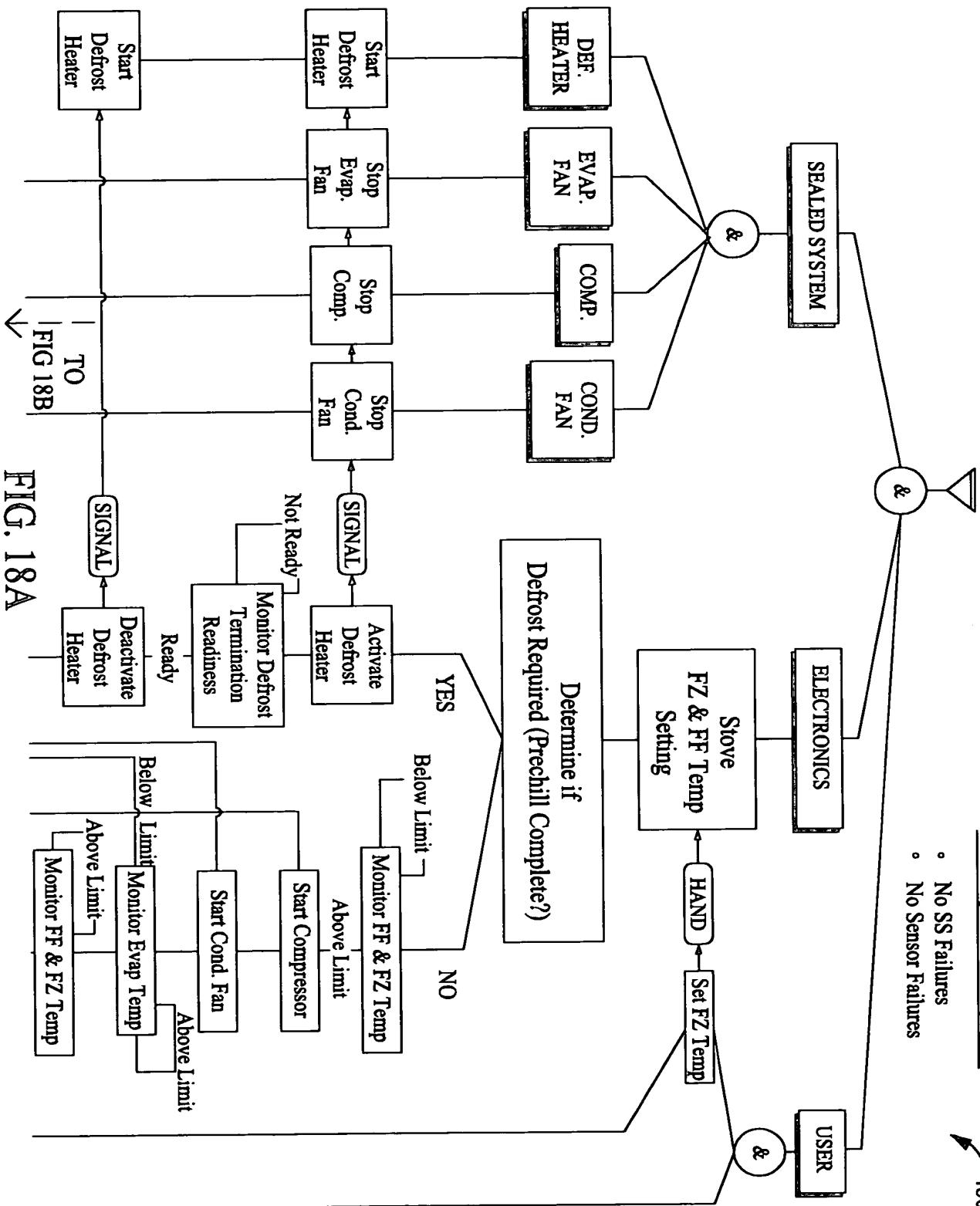


FIG. 17

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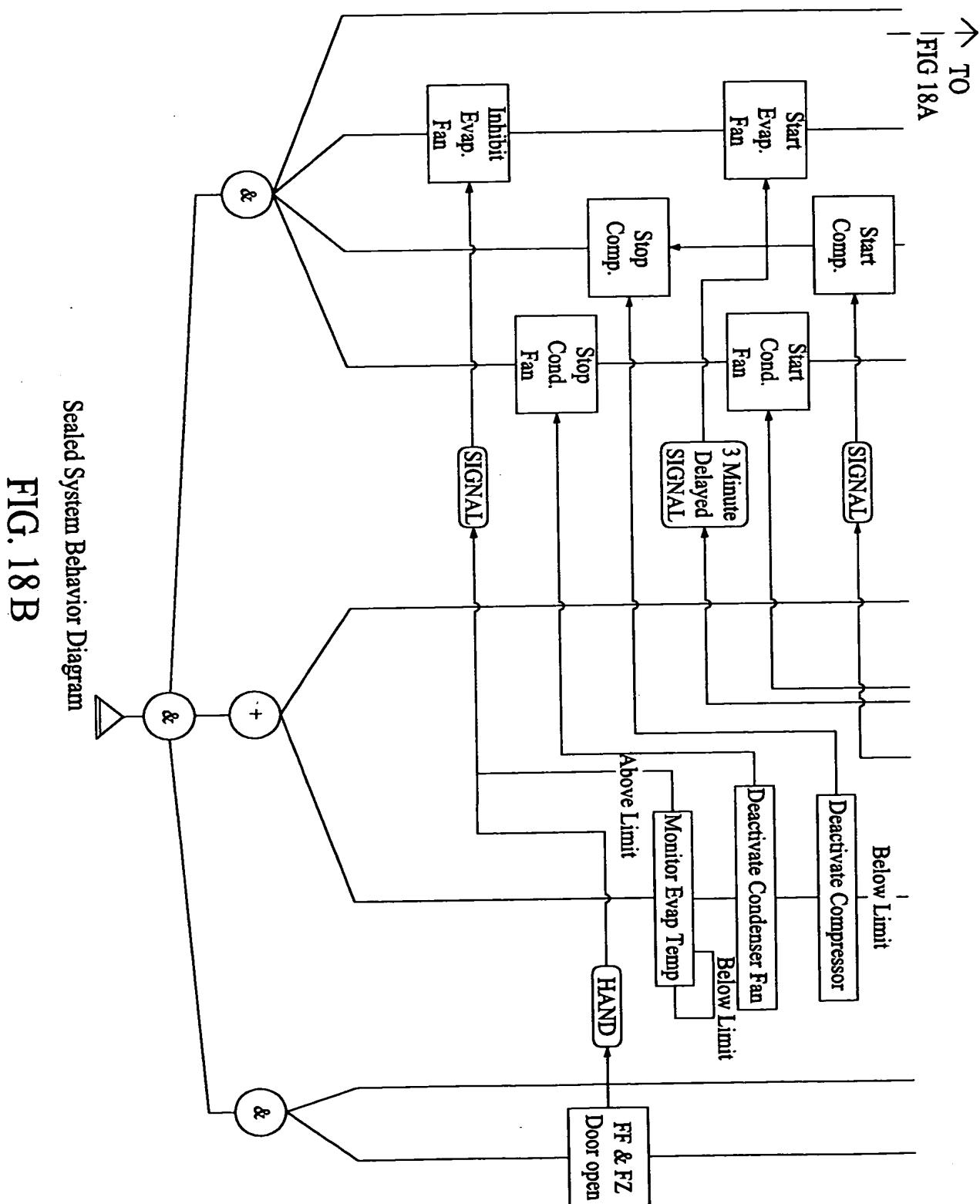
Sealed System Assumptions:

- No SS Failures
- No Sensor Failures

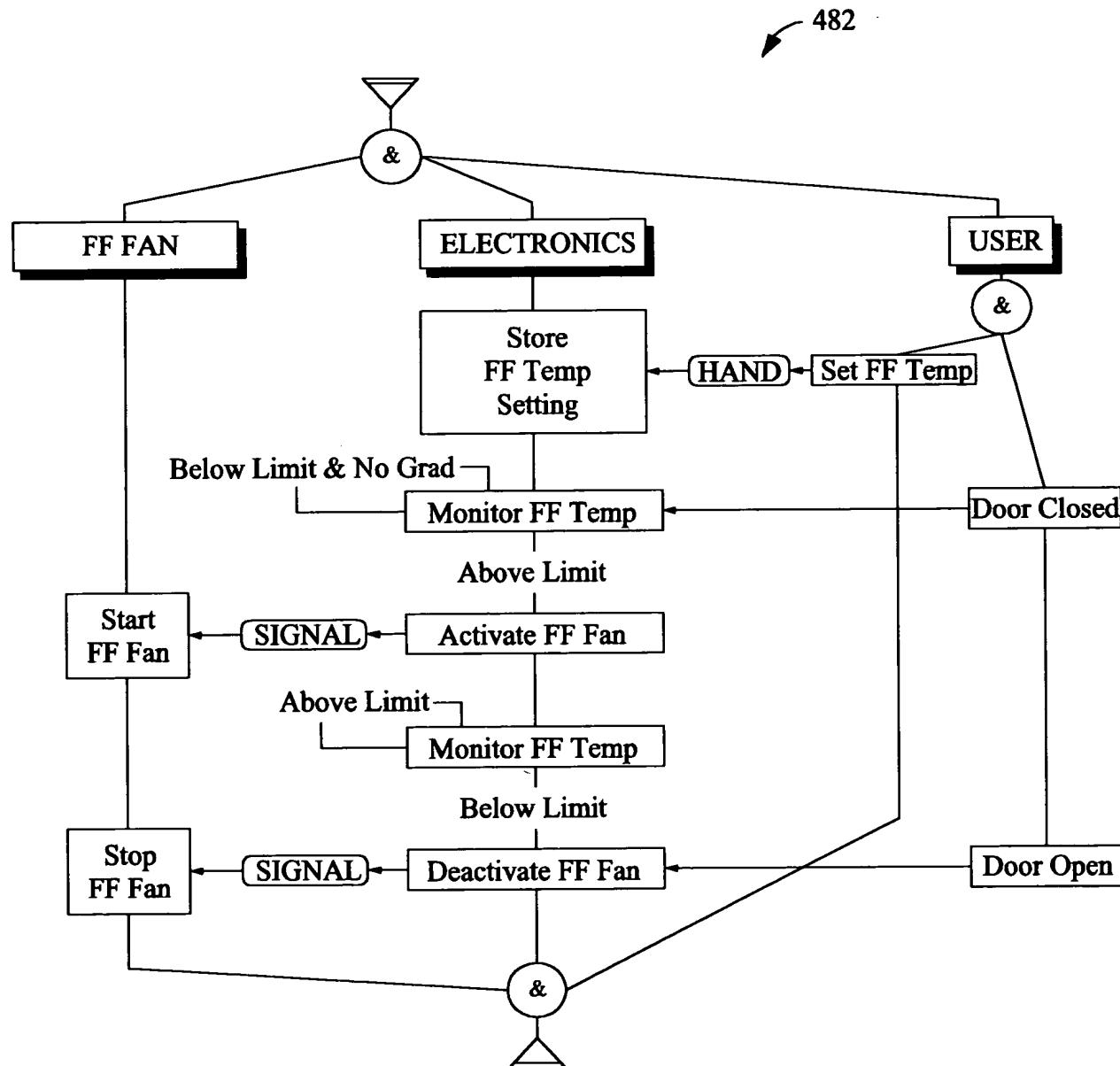
480

FIG. 18A

FIG. 18B



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Fresh Food Fan Behavior Diagram

FIG. 19

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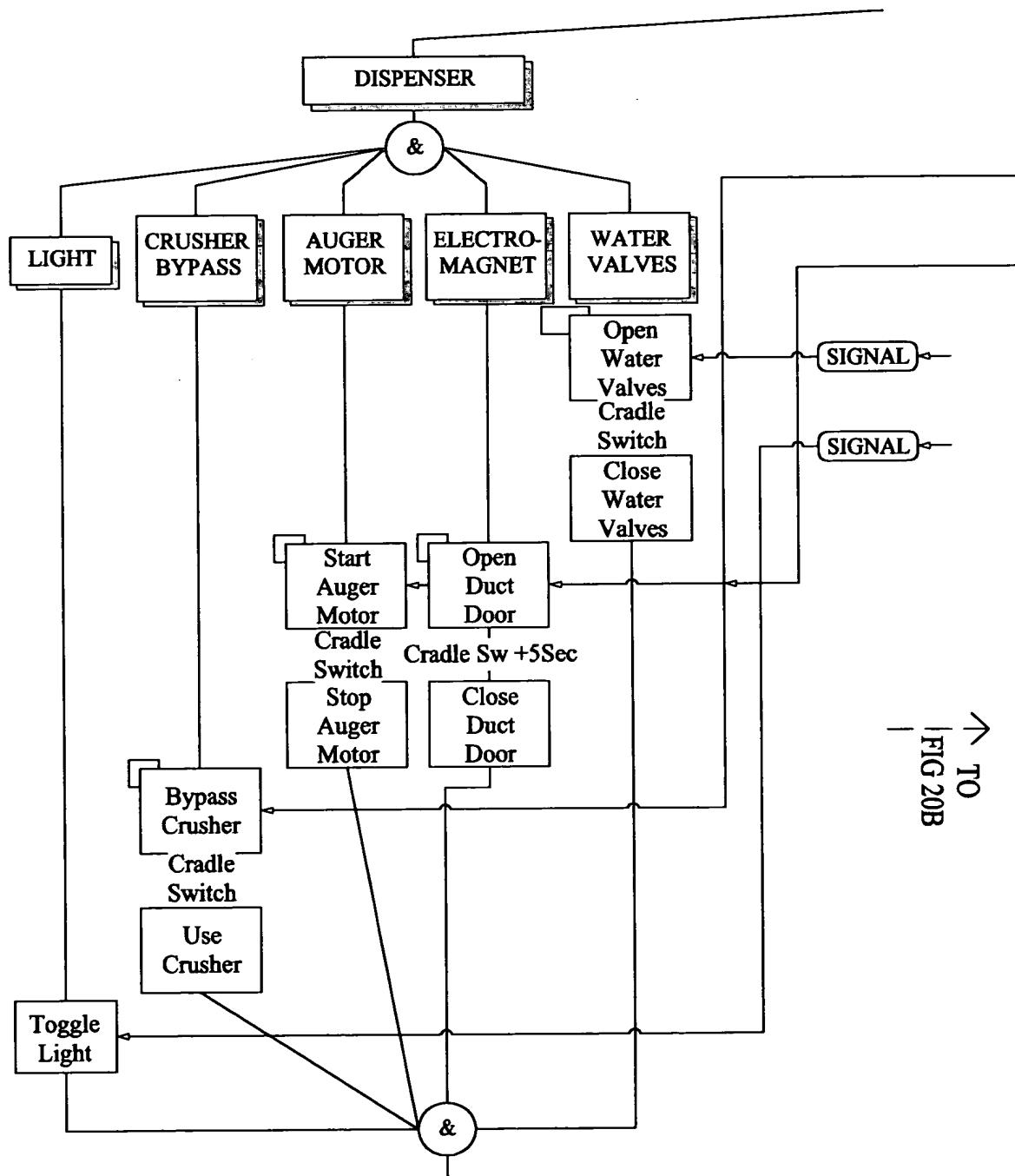


FIG. 20A

Dispenser Behavior

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Dispenser Assumptions:

- **No Sensor Failures**

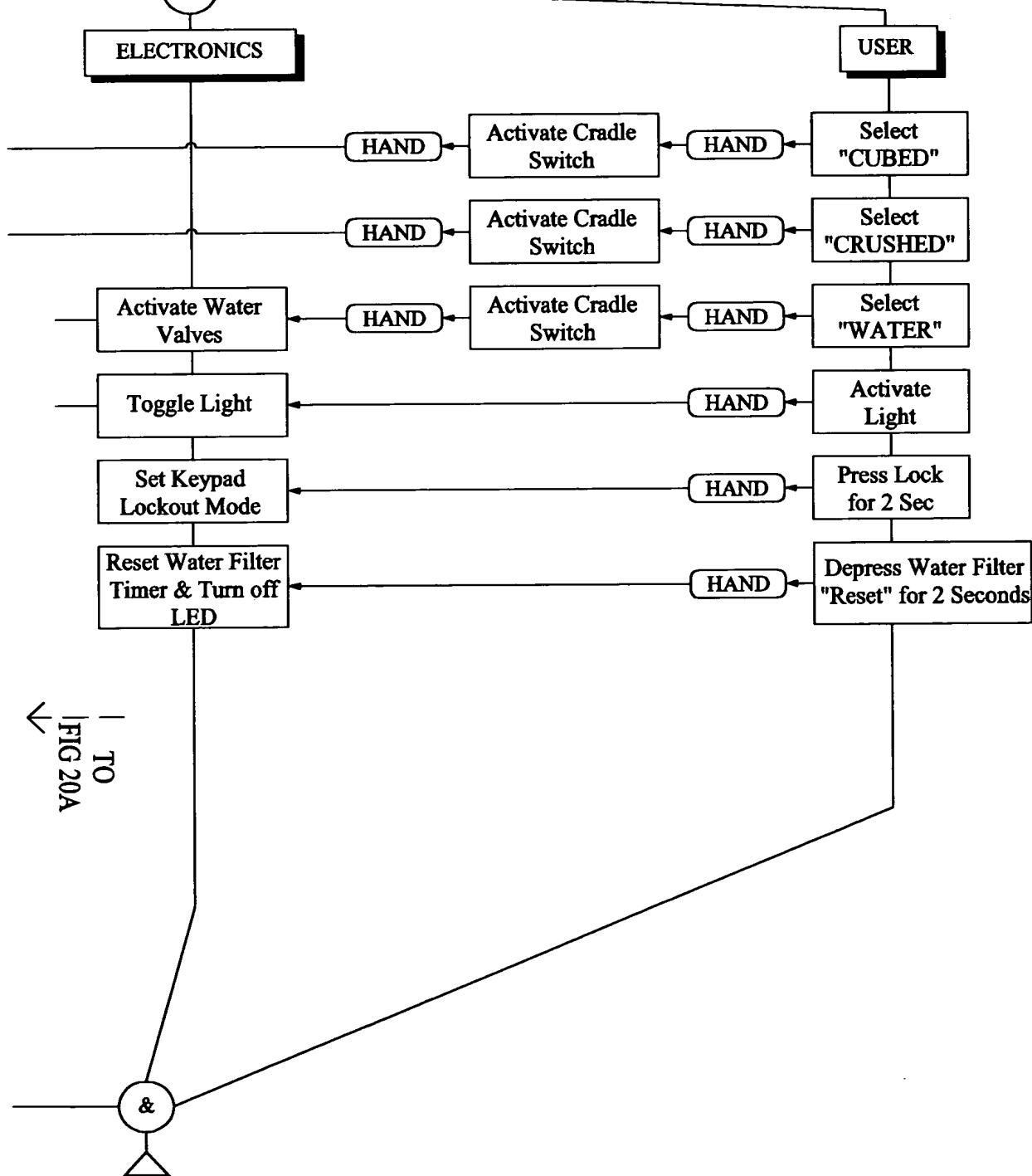


FIG. 20B

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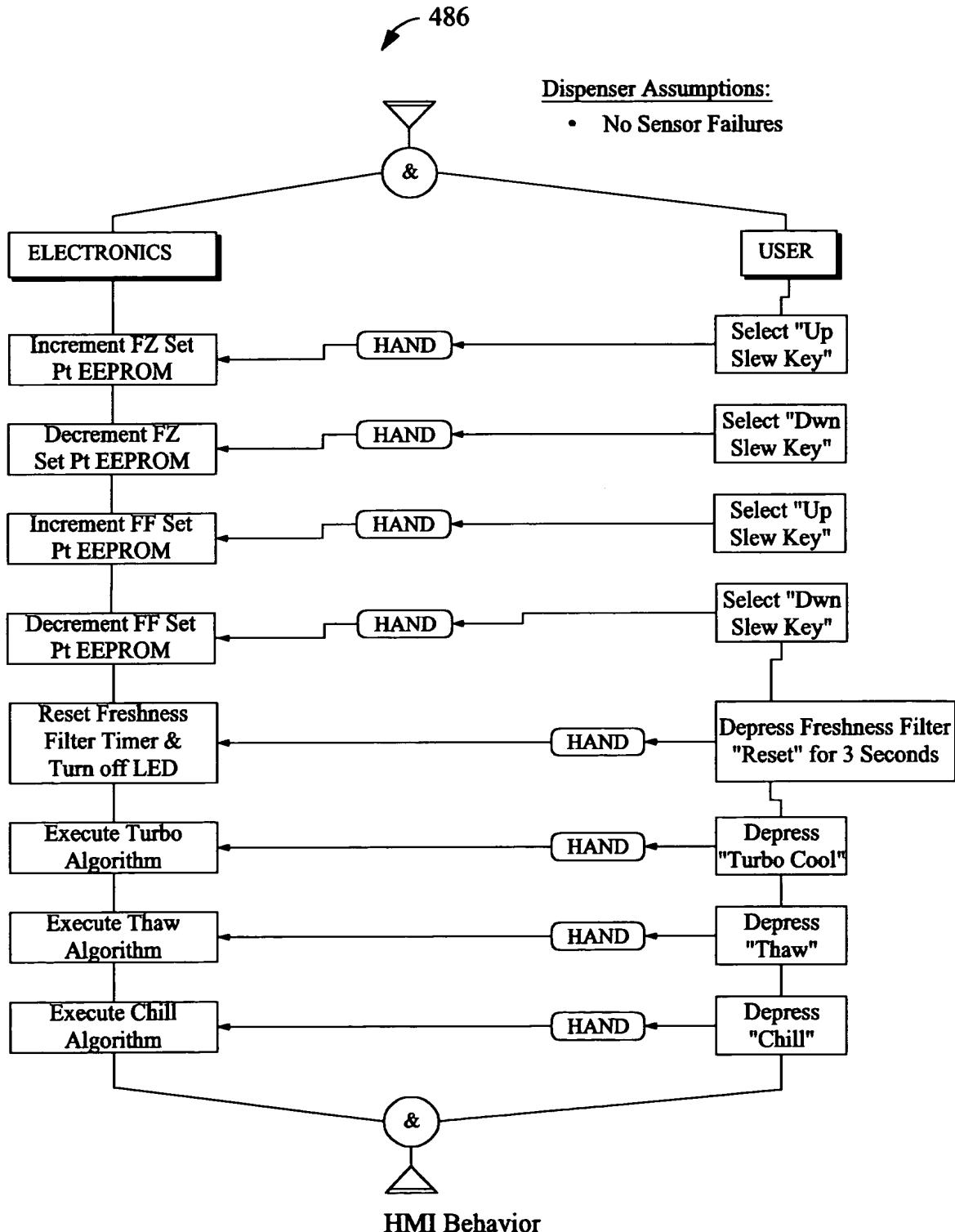
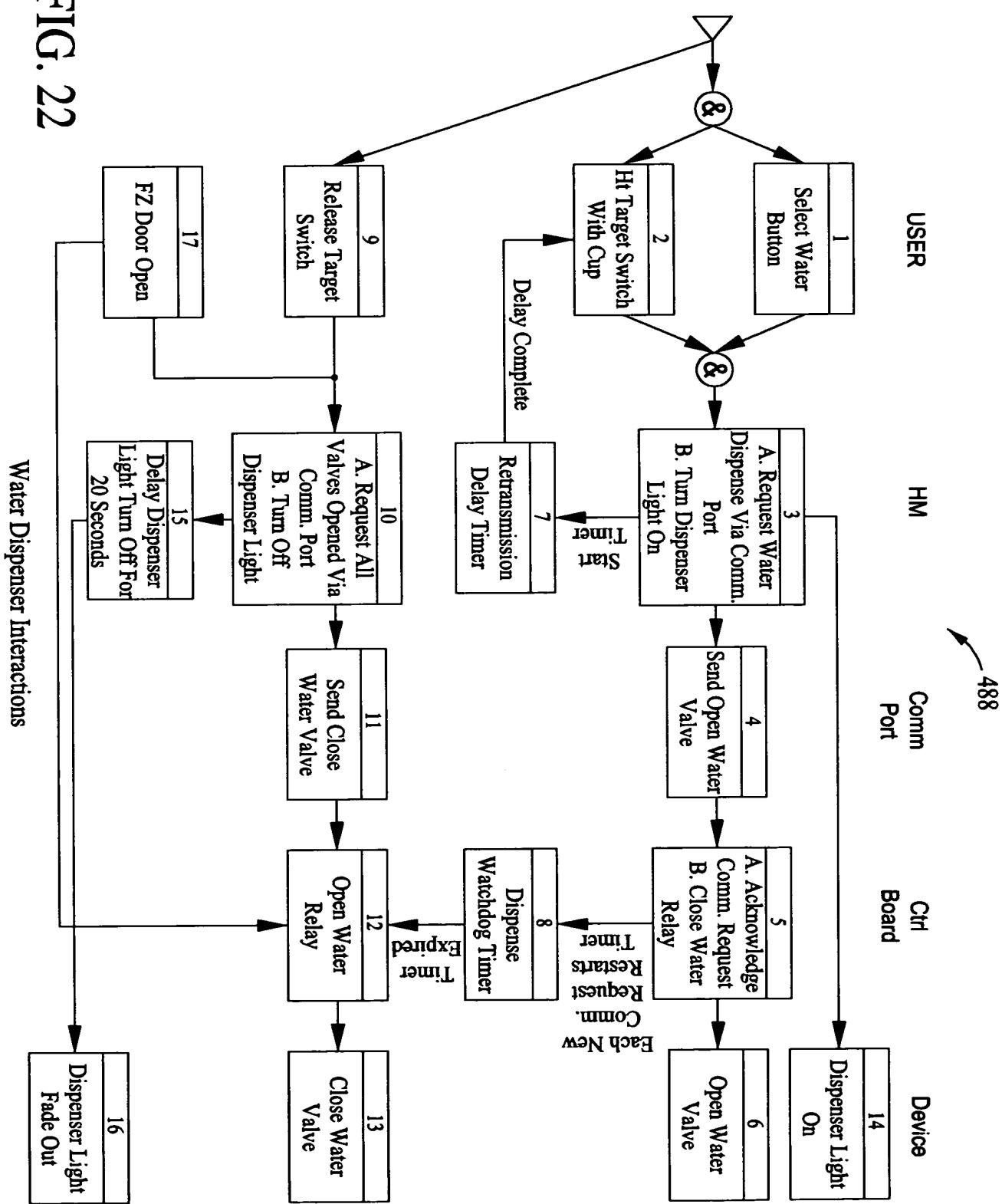


FIG. 21

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Suite 2600, St. Louis, MO 63102 (314) 621-5070

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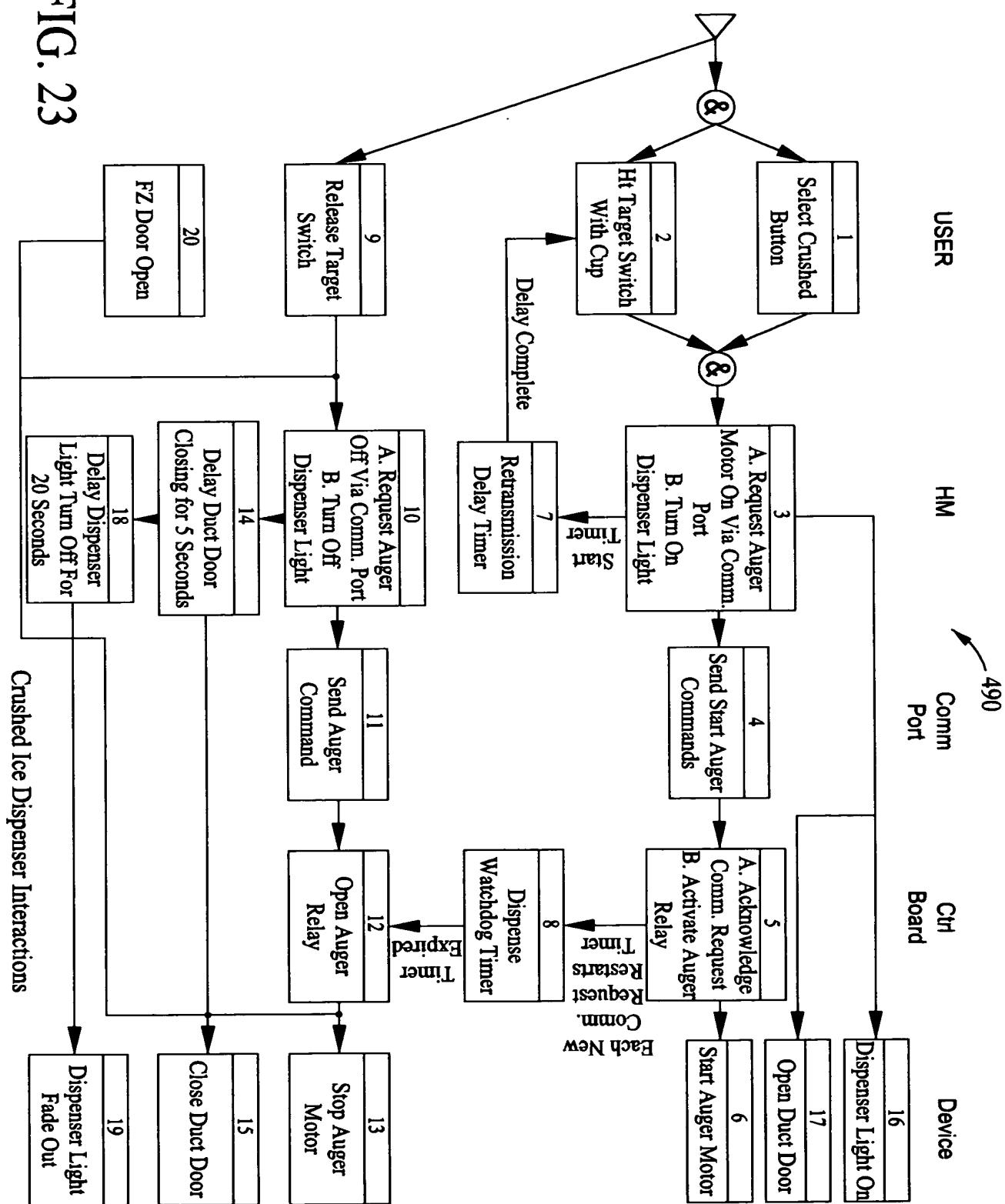
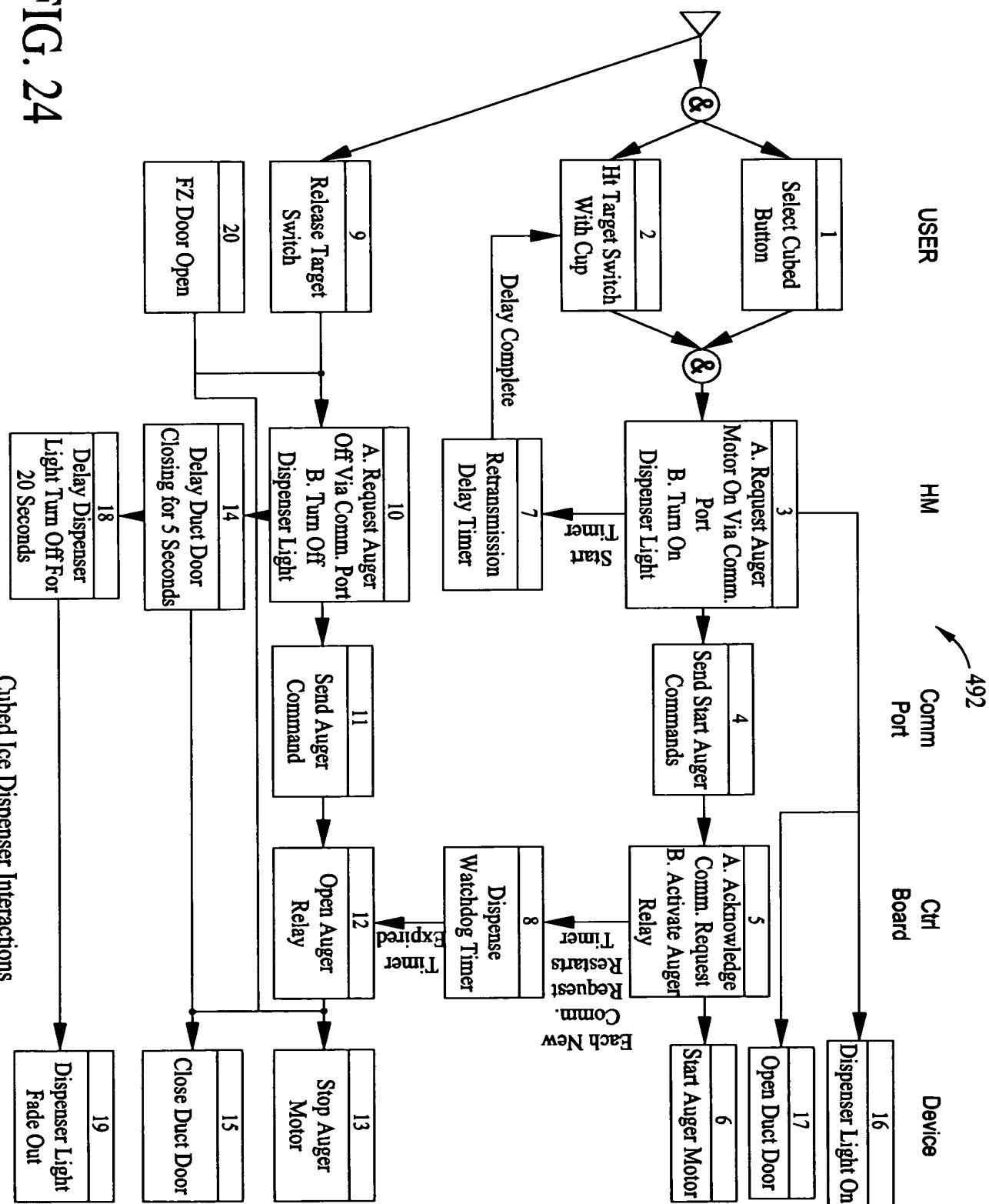


FIG. 23

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FIG. 24



JOHN S. BEULICK, ARMSTRONG TEASDALE LLP, ST. LOUIS, MO 63102
ONE METROPOLITAN SQUARE, SUITE 2600, (314) 621-5070

ARCHITECTURE

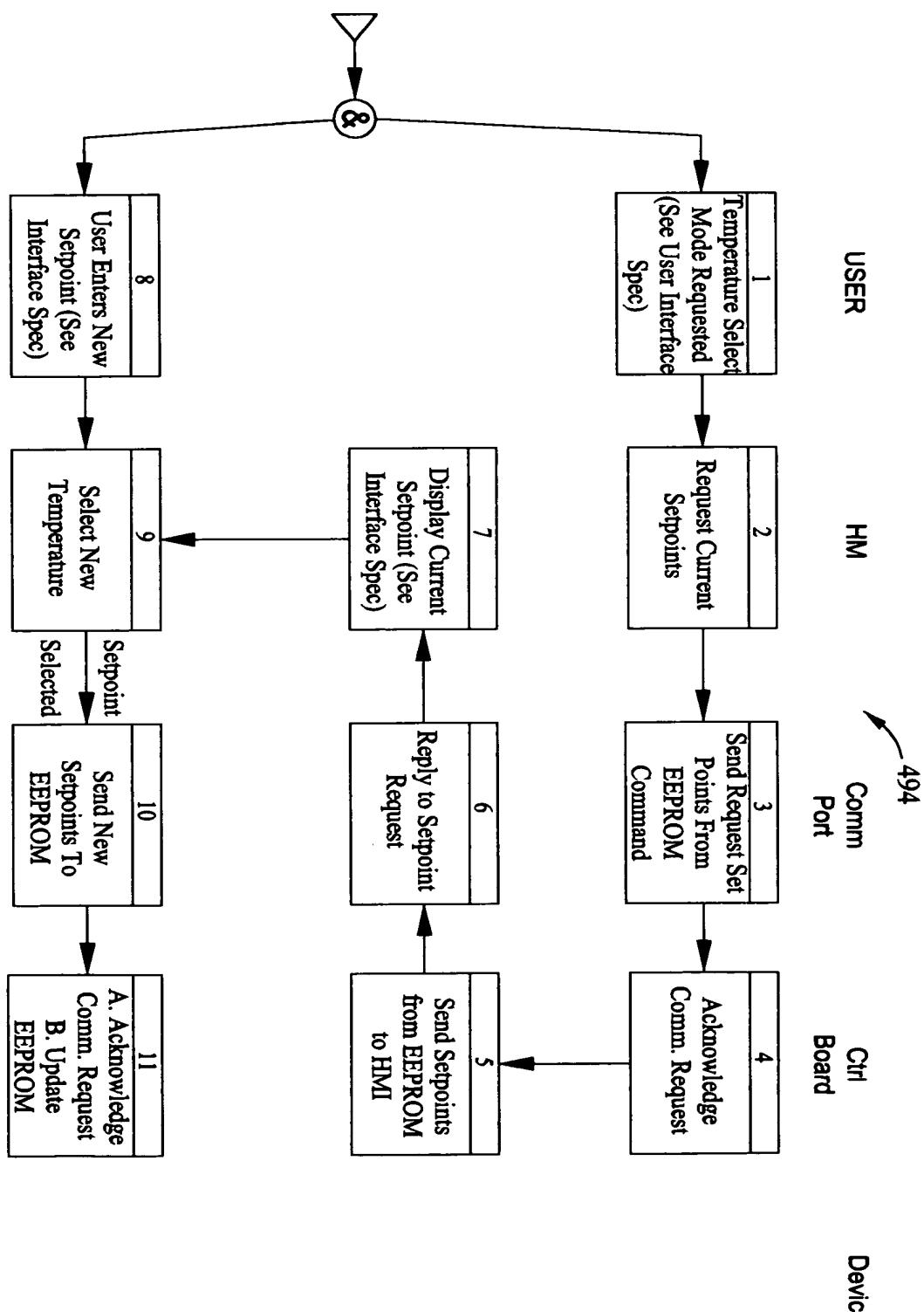
Teasdale LLP 0

John S. Beulick, Armstrong Teasdale L.L.P. One Metropolitan Square

Suite 2600, St. Louis, MO 63102 (314) 621-5070

1100 E. 25th, St. Louis, MO 63102 (314) 621-3070

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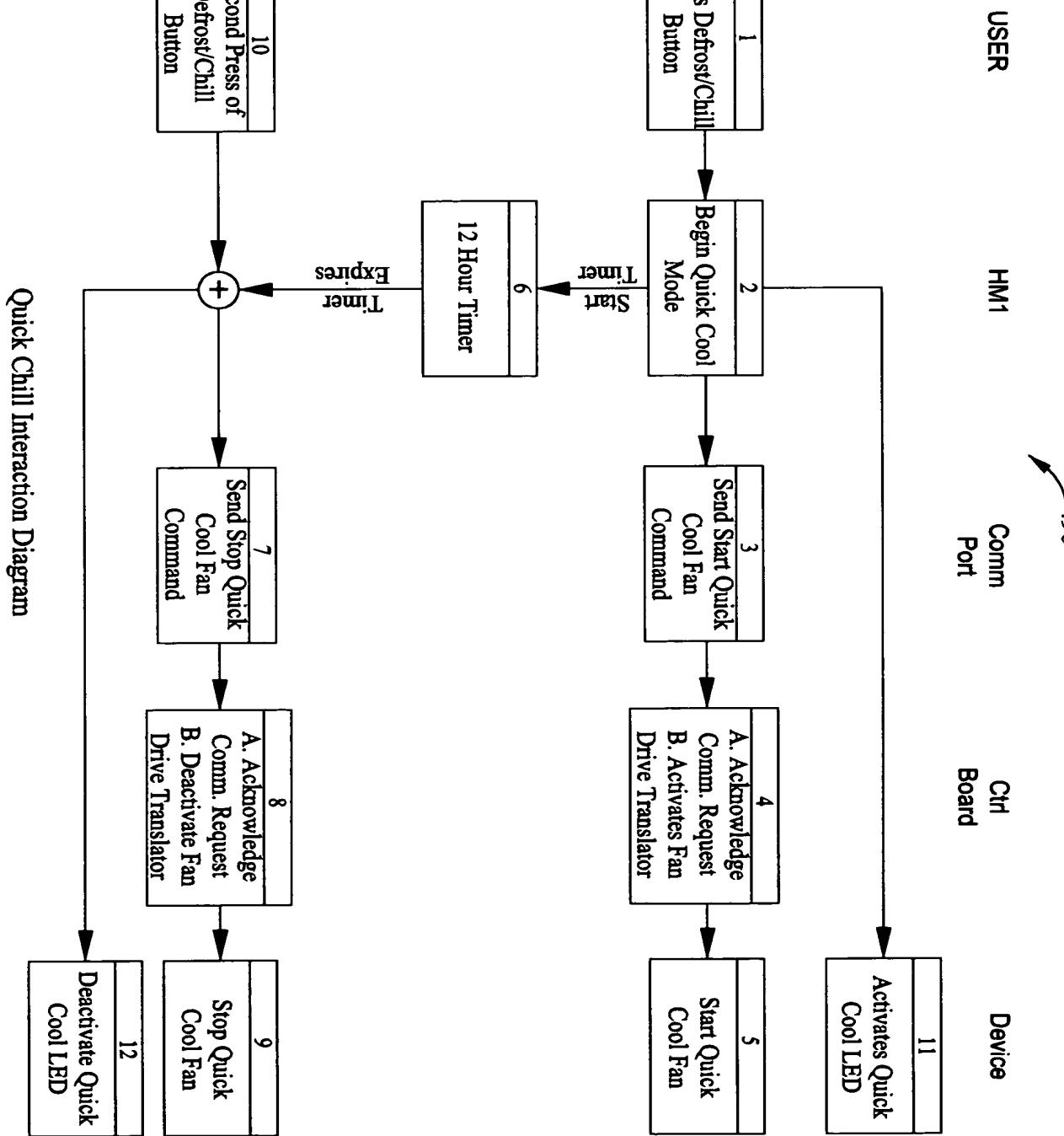
NOTE: Setpoint Selected implies that the final selection has been made and that the selection has timed out.

FIG. 25

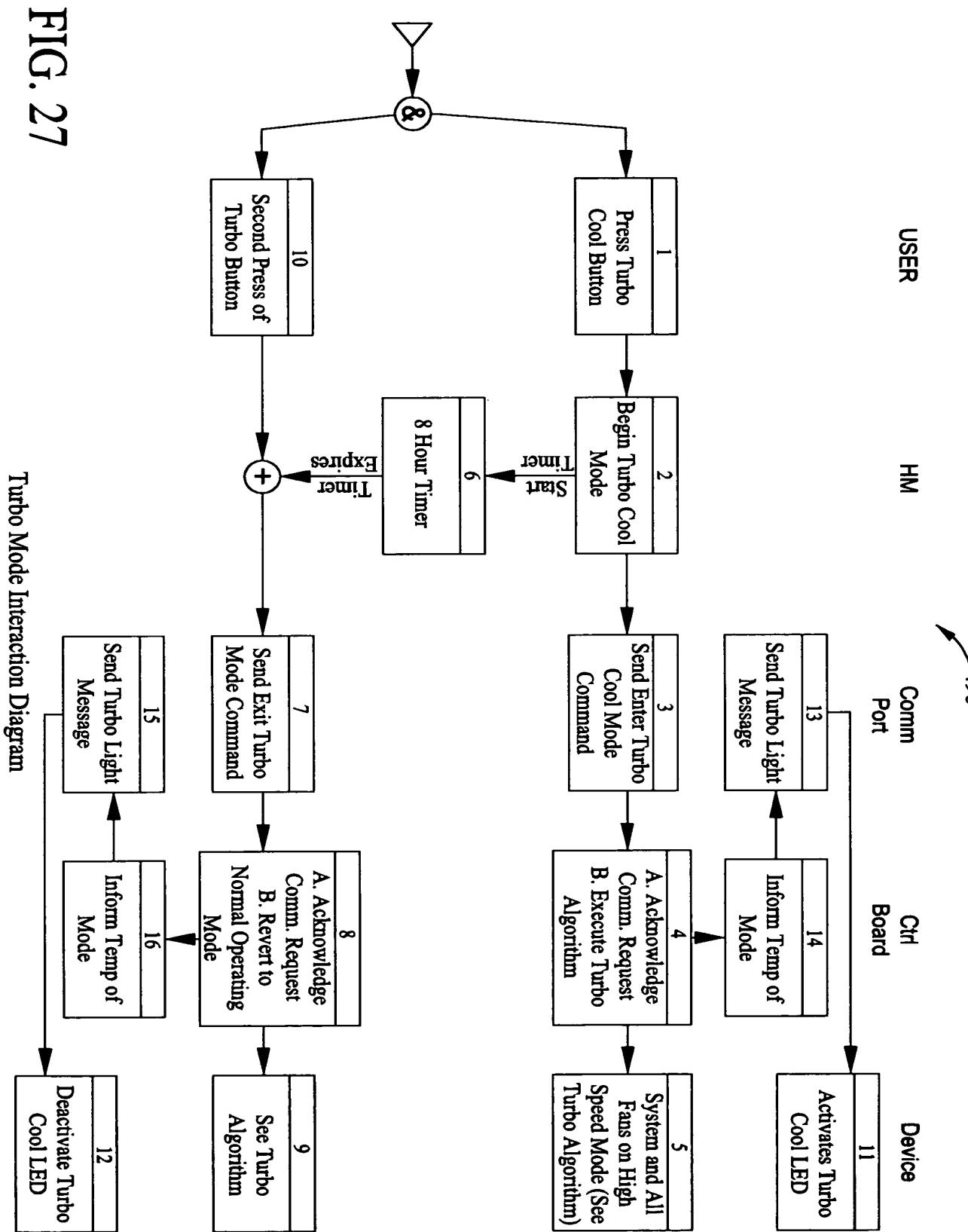
Temperature Setting Interaction Diagrams

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FIG. 26



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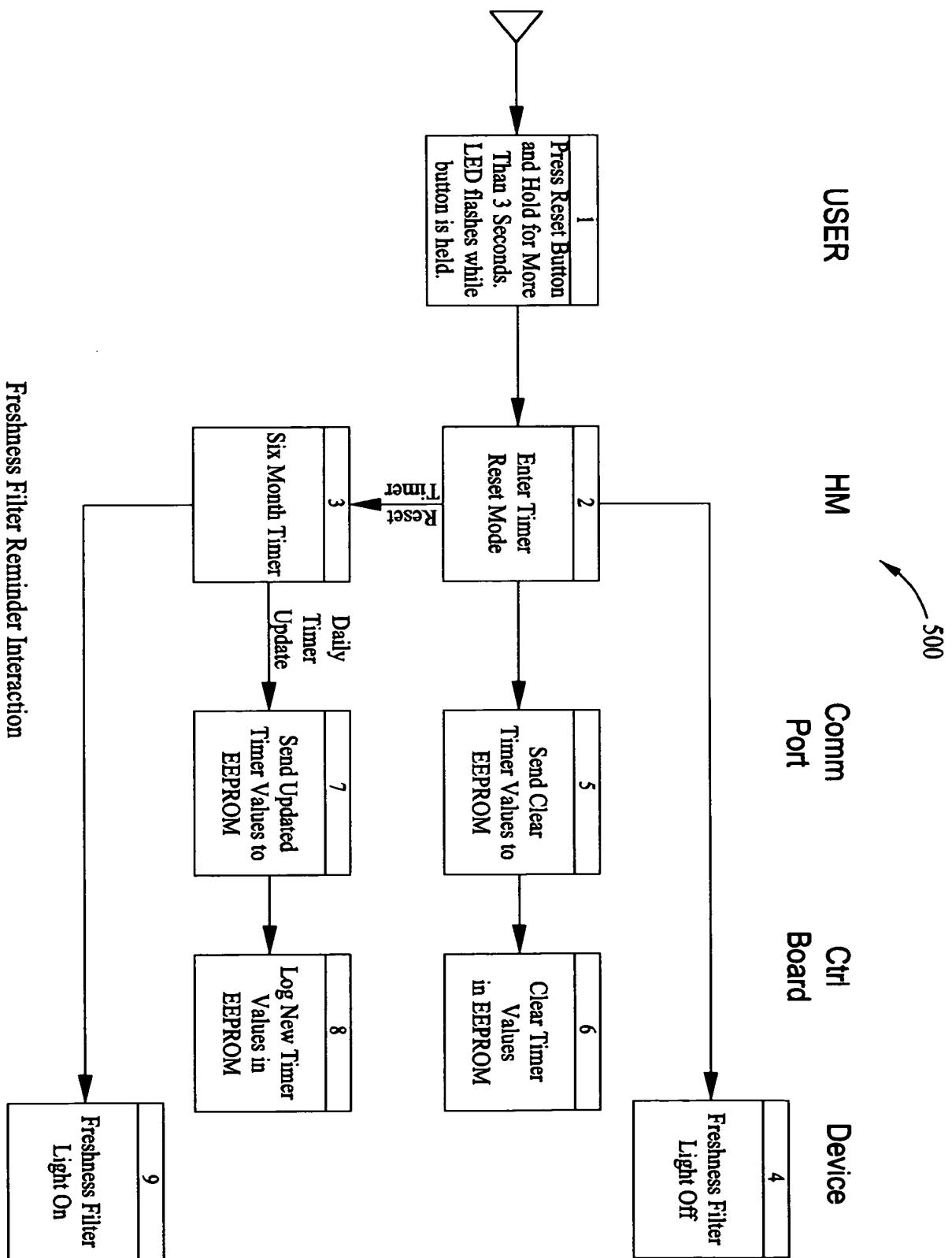
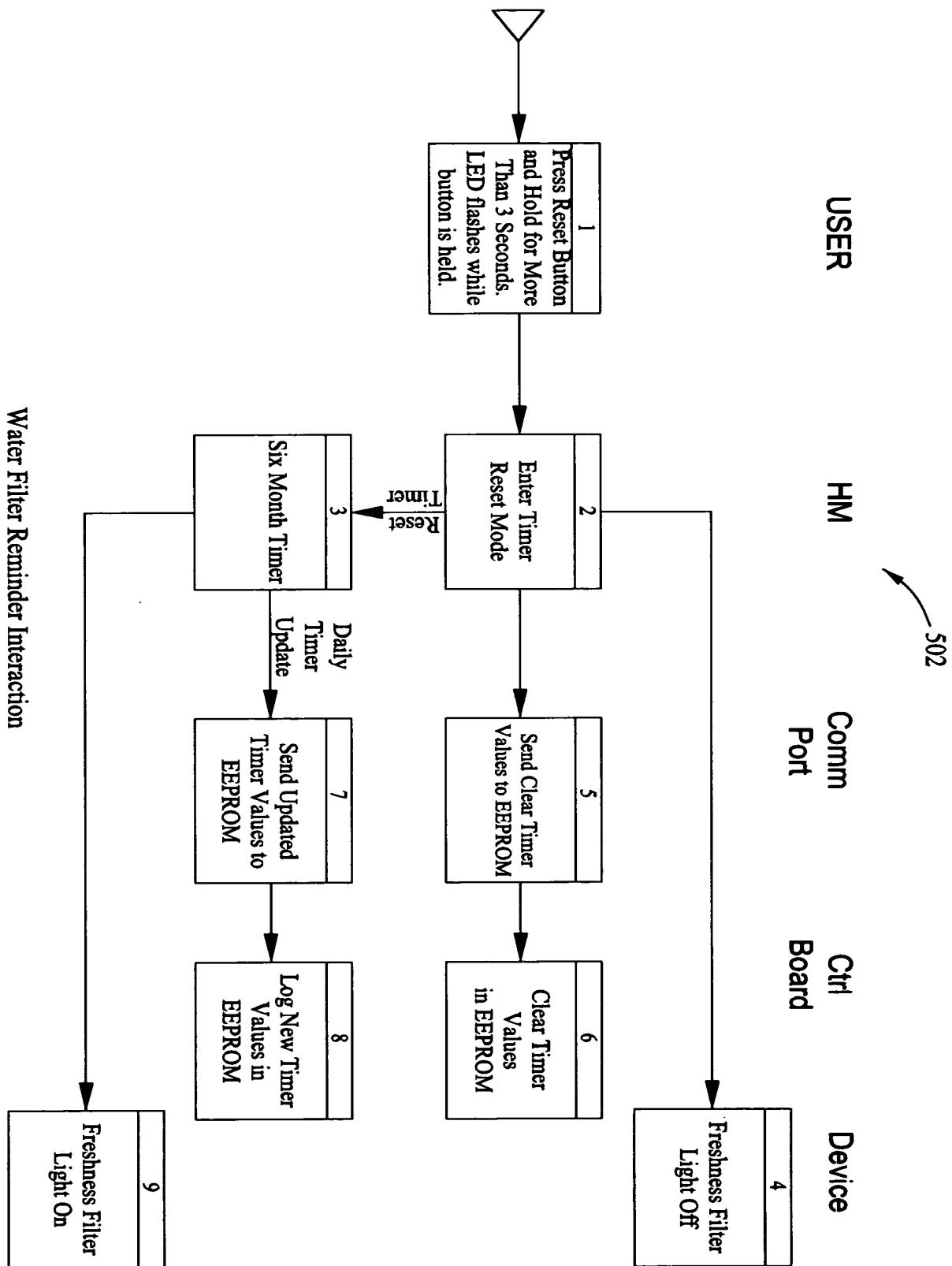


FIG. 28
Freshness Filter Reminder Interaction

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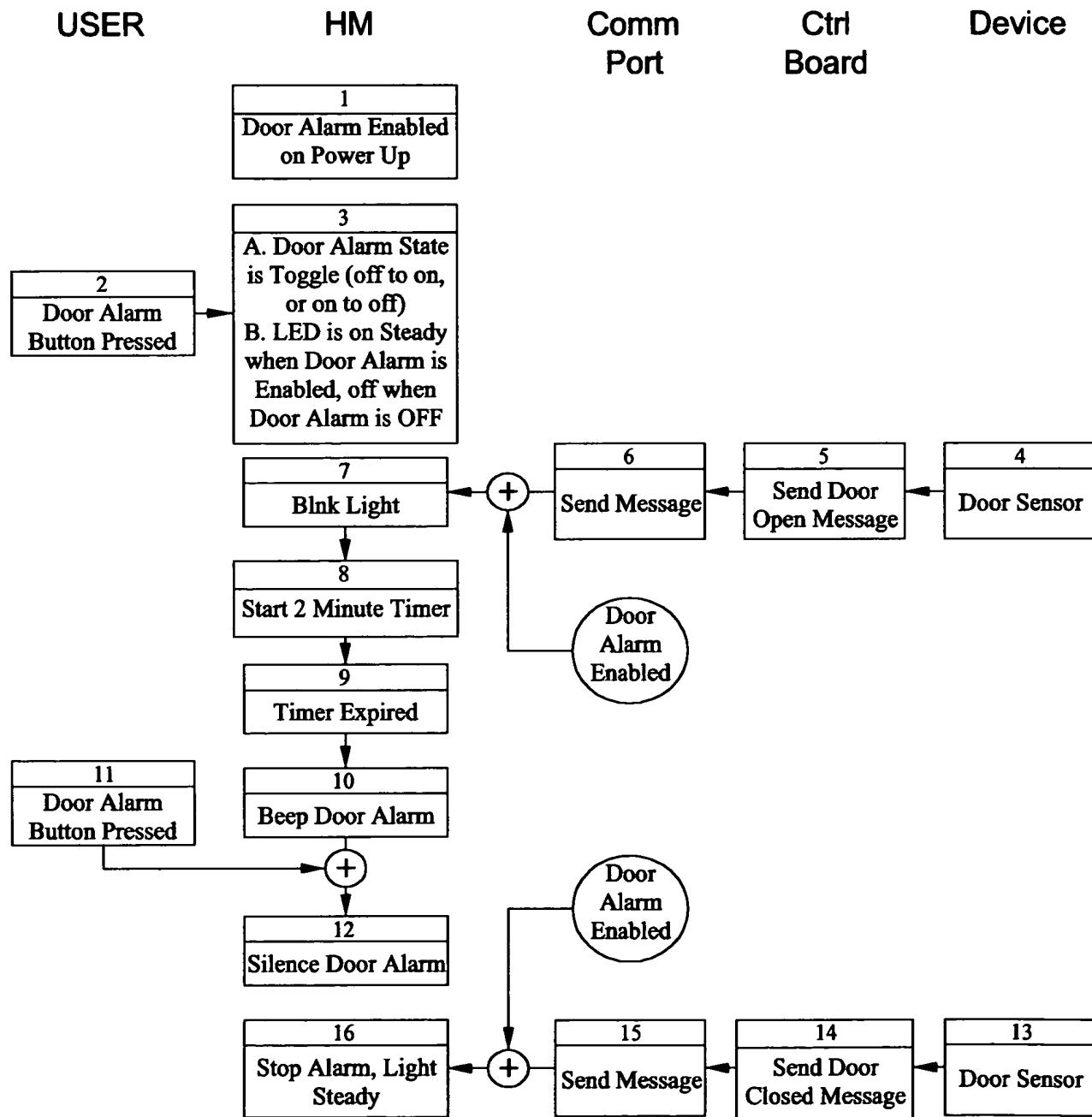


Water Filter Reminder Interaction

FIG. 29

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Door Open Interaction Diagram

FIG. 30

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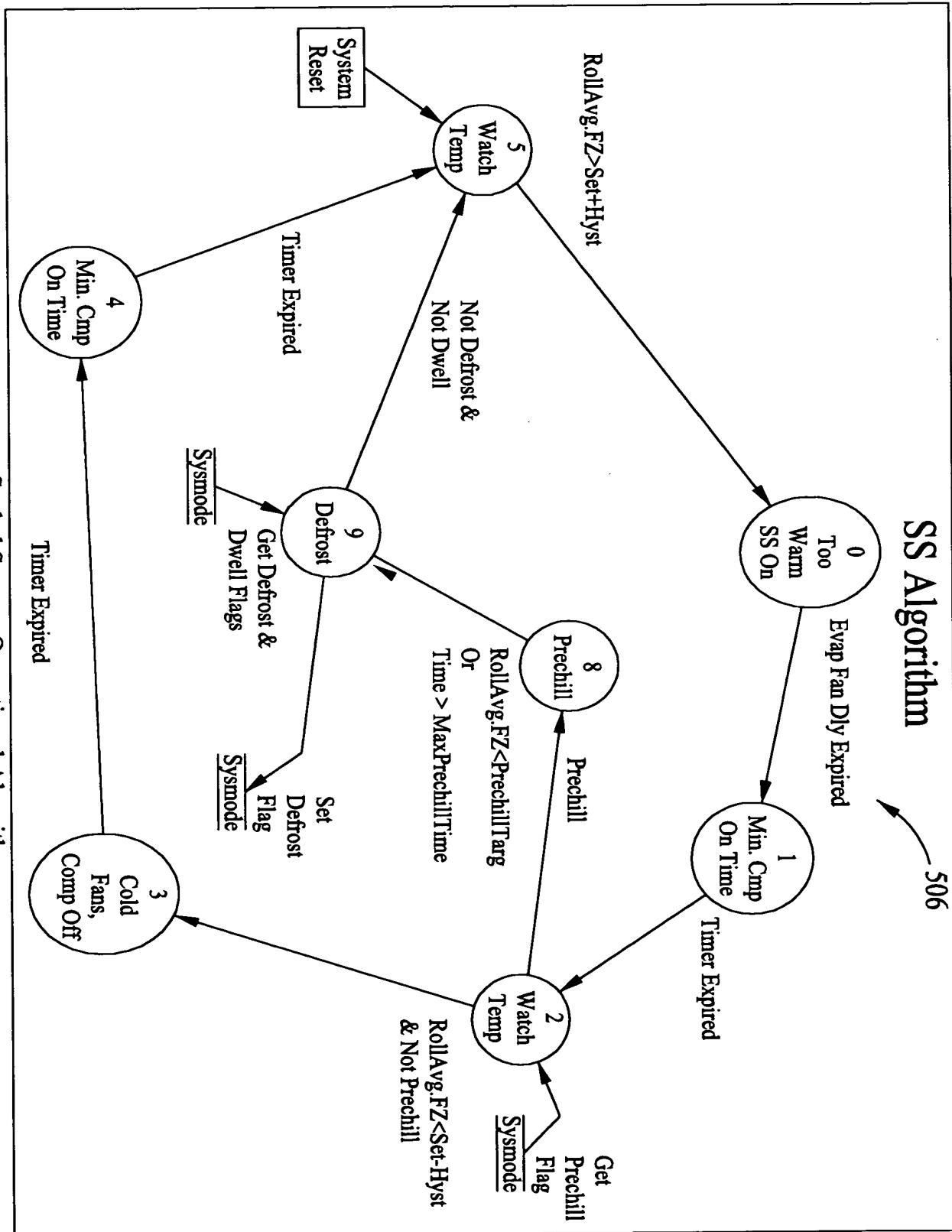
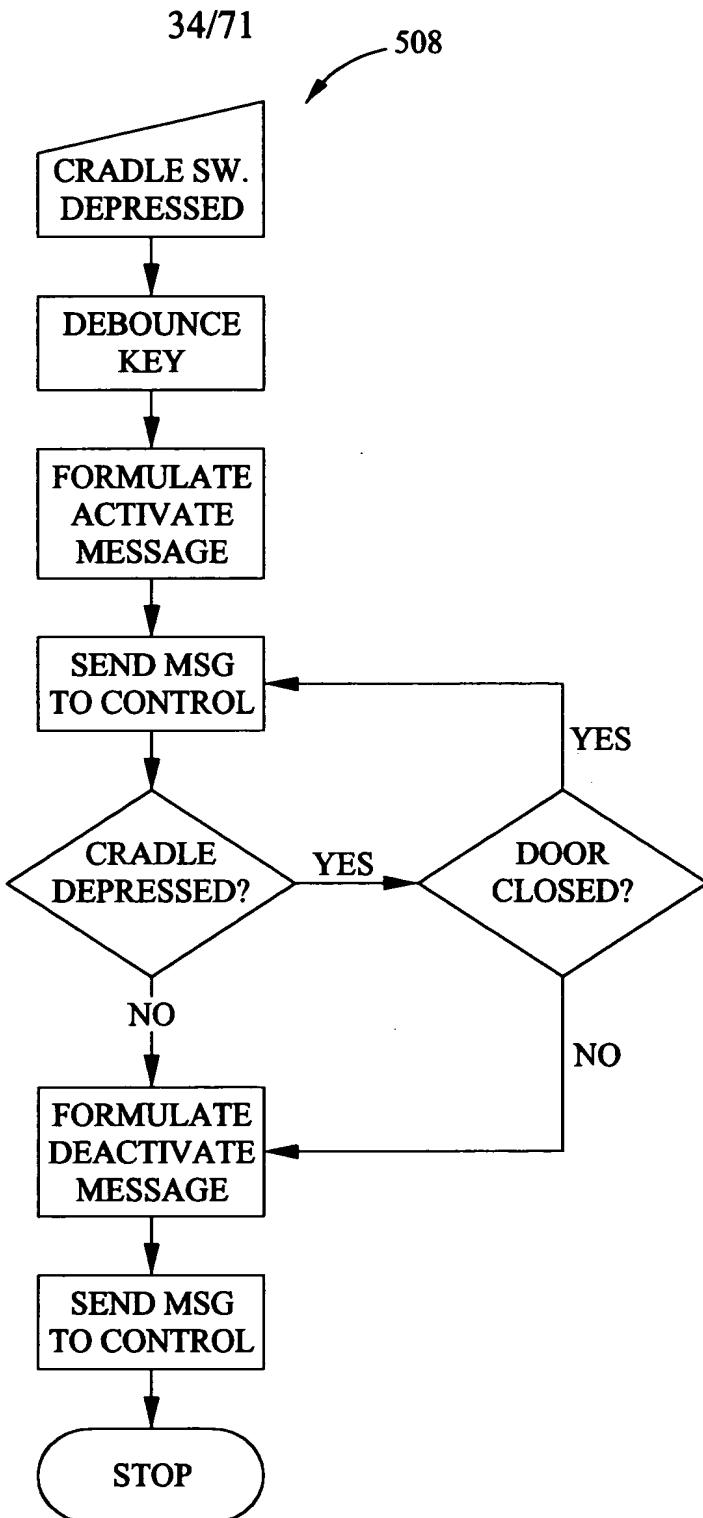


FIG. 31

Sealed System Operational Algorithm



Dispenser Control Algorithm

FIG. 32

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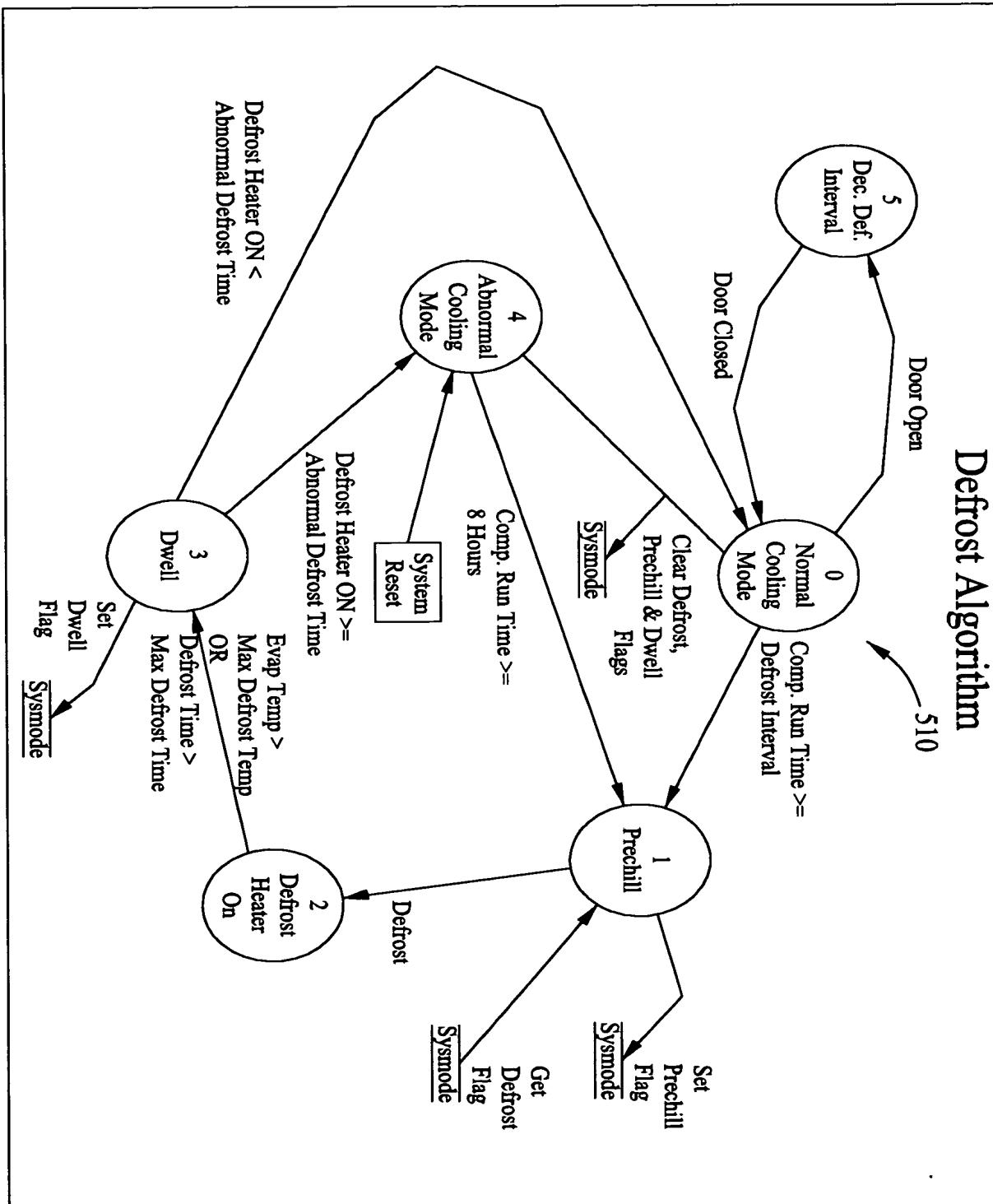


FIG. 33

Defrost Control State Diagram

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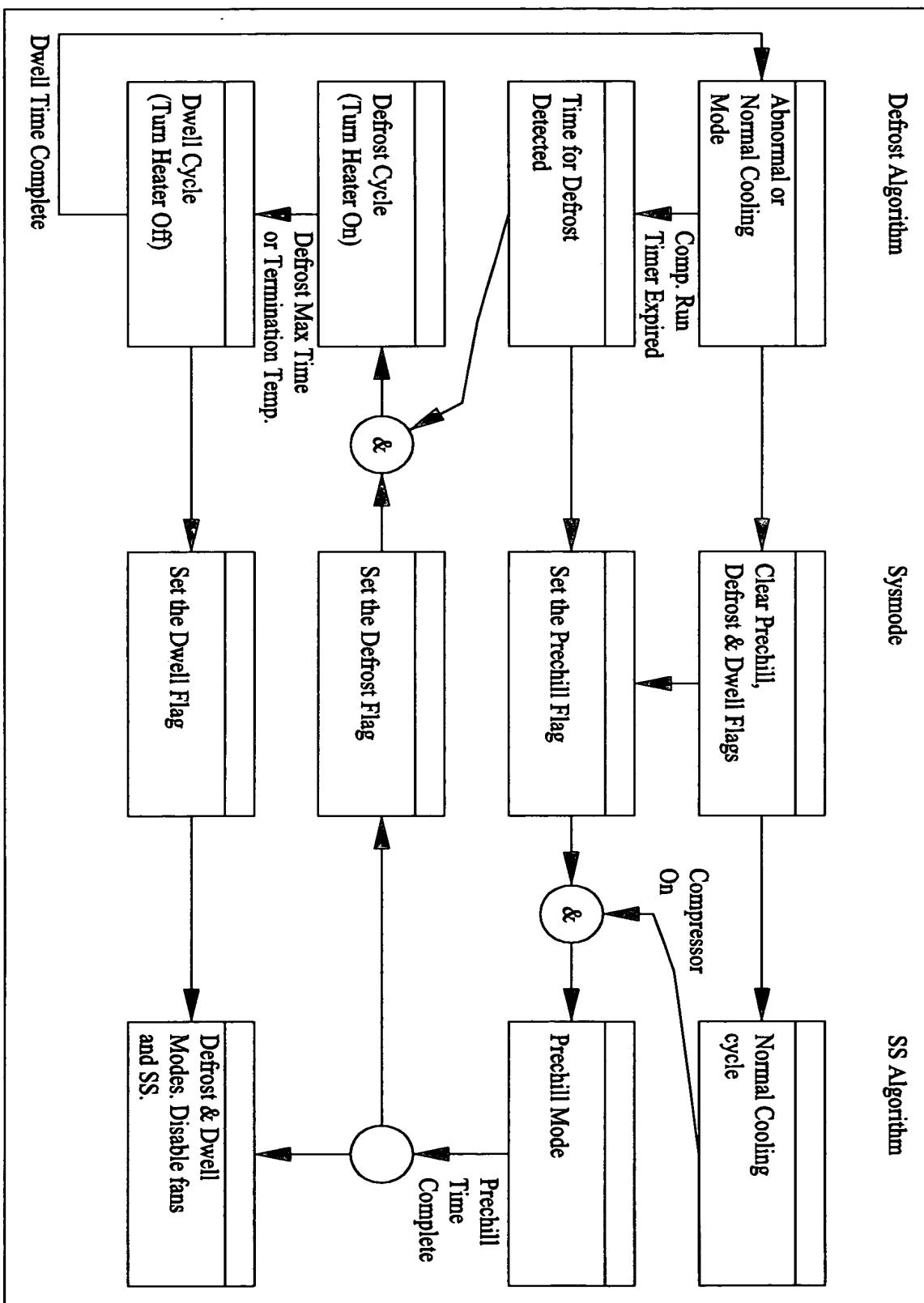
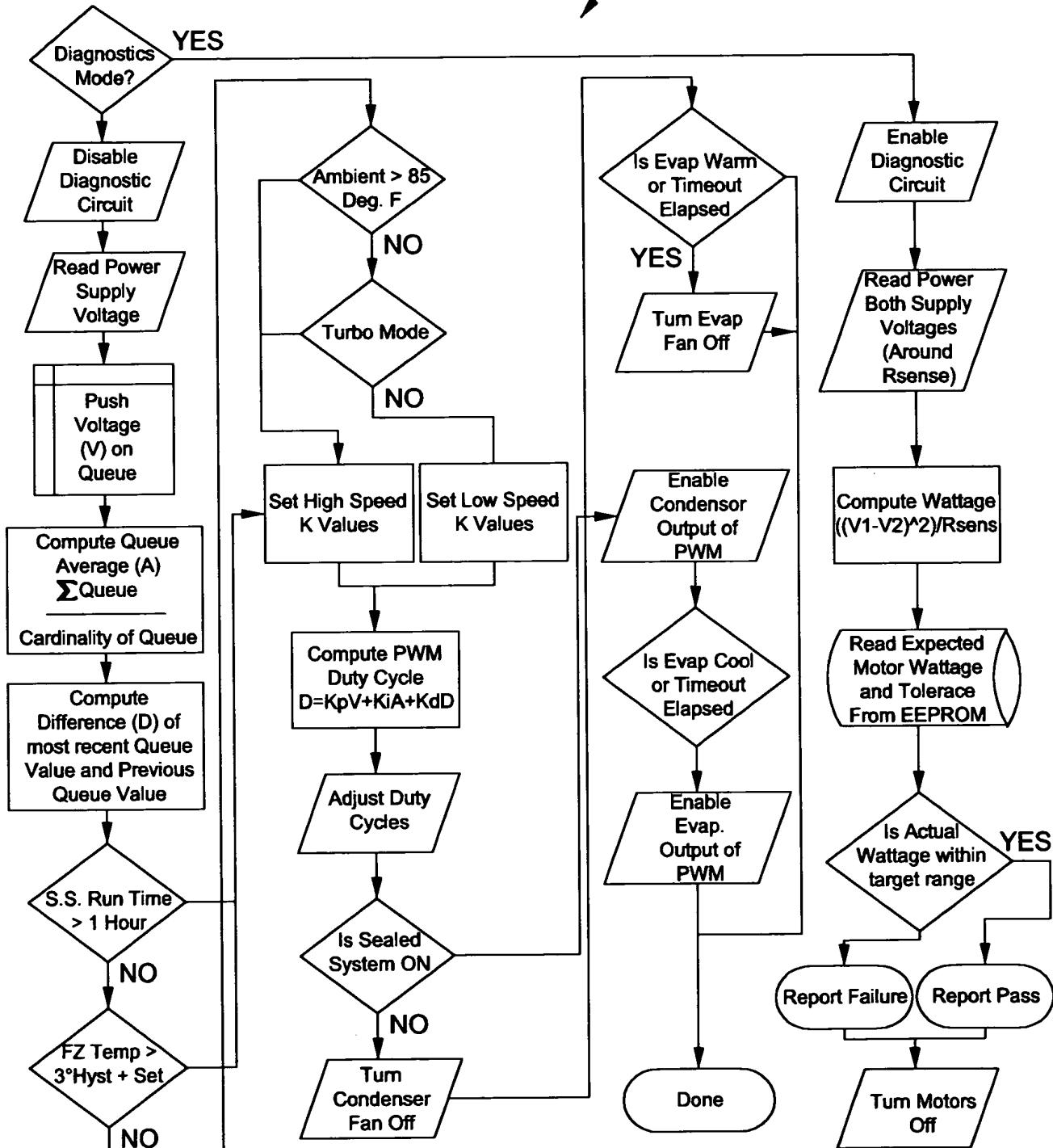


FIG. 34

Evap. & Cond.Fan Control:

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Fan Speed Control

Notes:

1. The FF & Evaporator fans will shut off for the first five minutes that the door is open
2. Only one fan at a time can be on at a time during diagnostics.
3. Once the fan has been switched to high speed, it remains in that state until the operational cycle is complete.

FIG. 35

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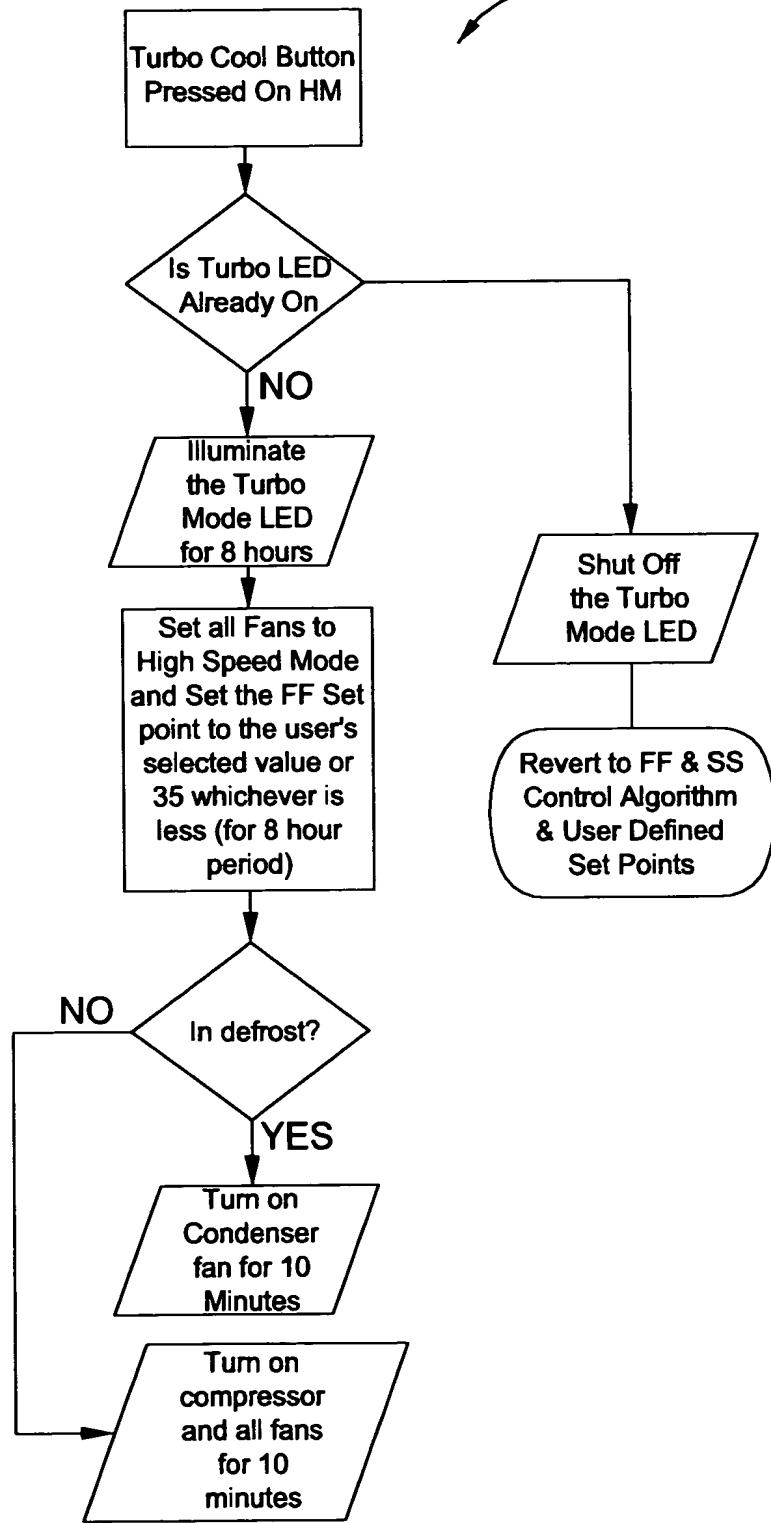
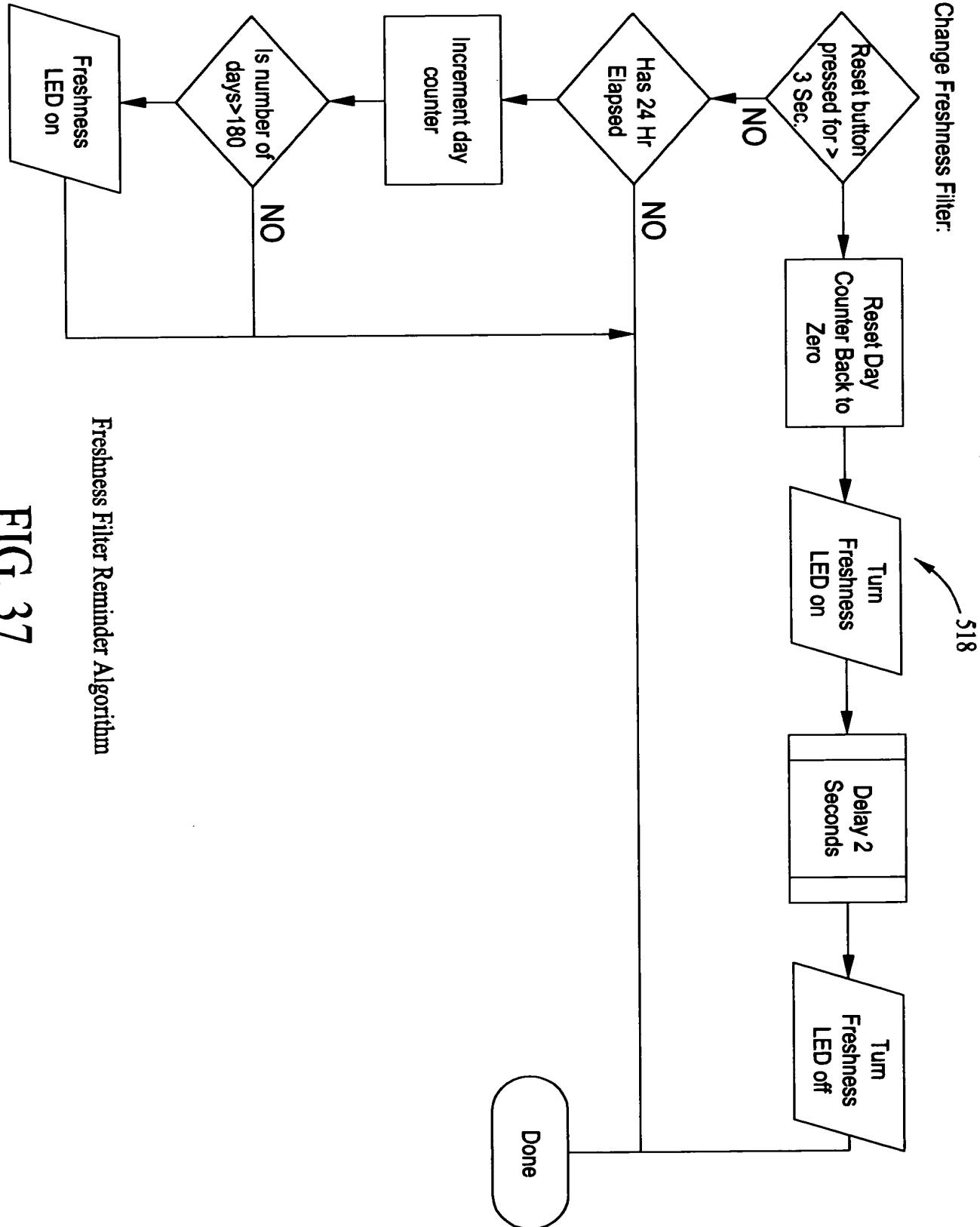
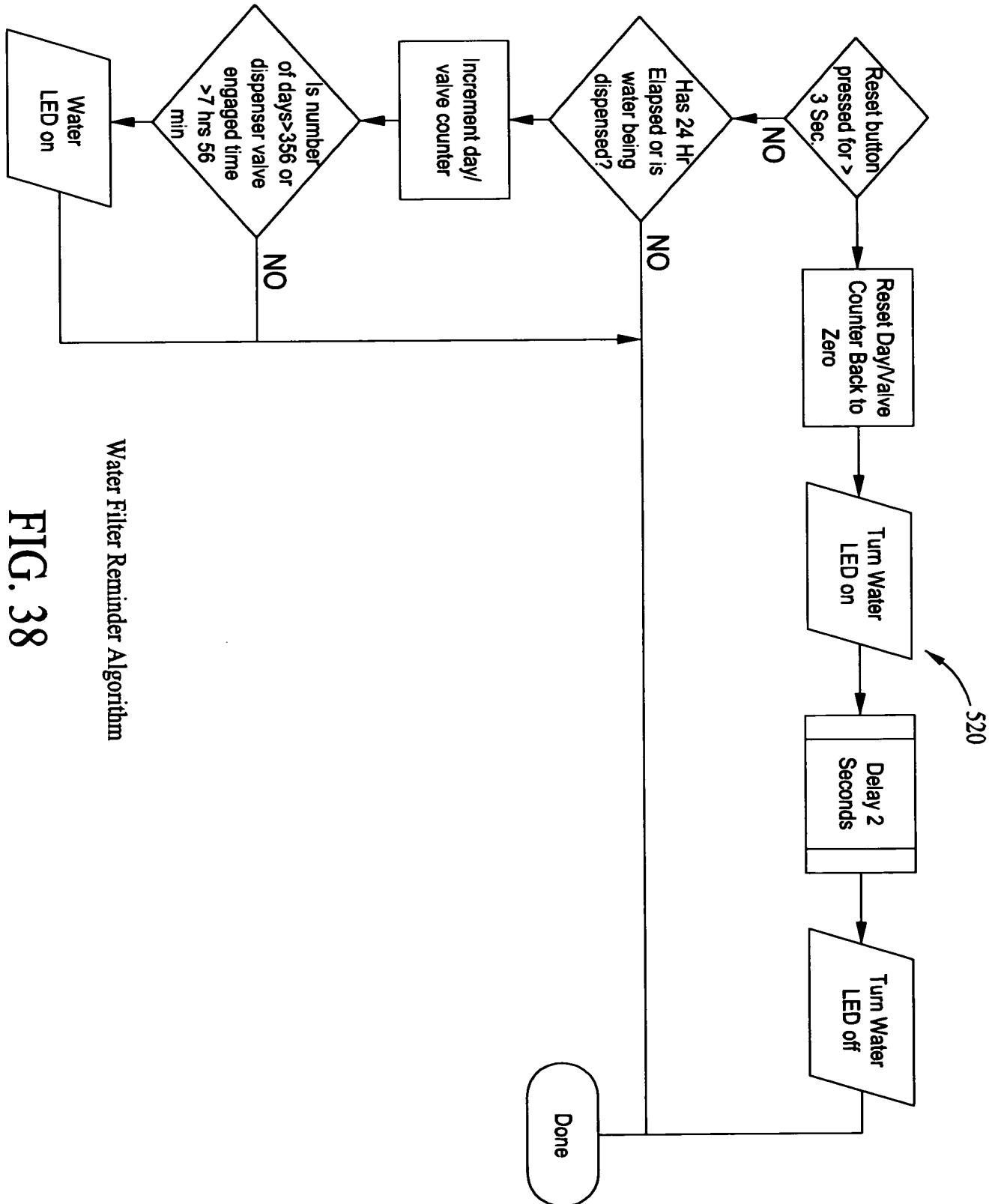


FIG. 36

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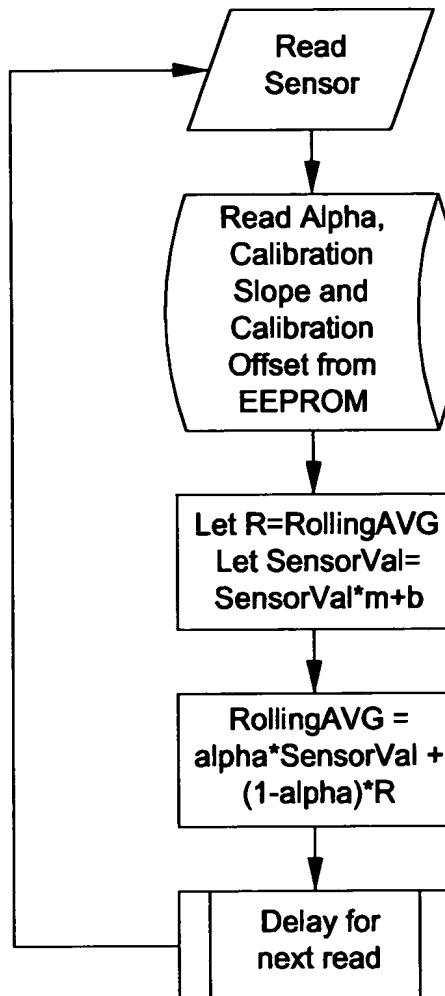
Water Filter Reminder Algorithm

FIG. 38

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SENSOR READ AND ROLLING AVERAGE ALGO:



Sensor Reading Algorithm

NOTE:

Fresh food average uses this algorithm twice to create a 2nd pole filter.

FIG. 39

StateCode=I

524

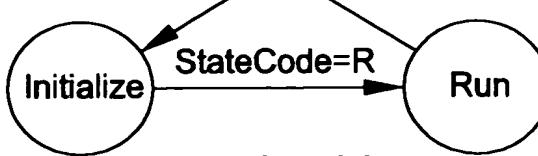


FIG. 40

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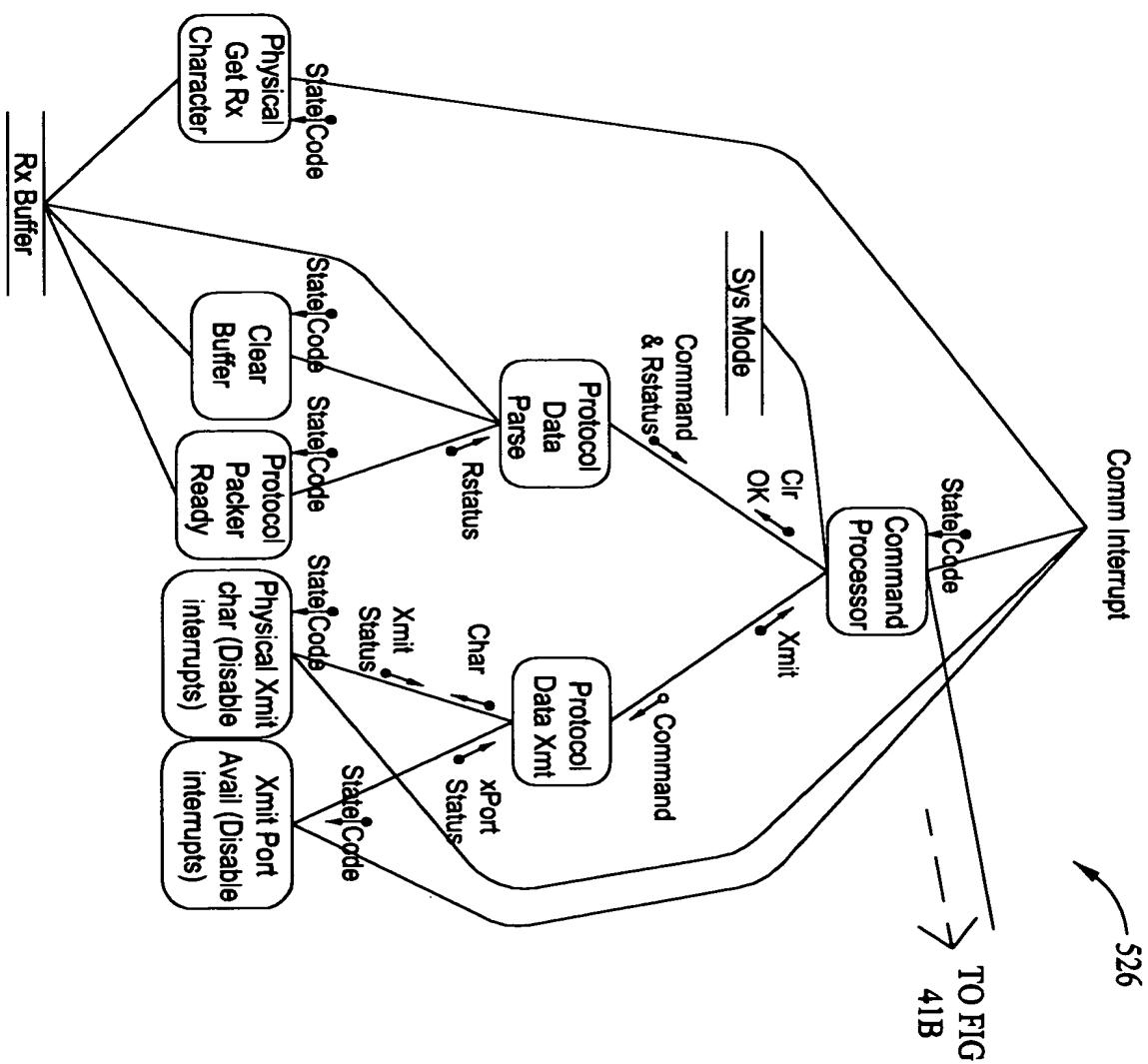
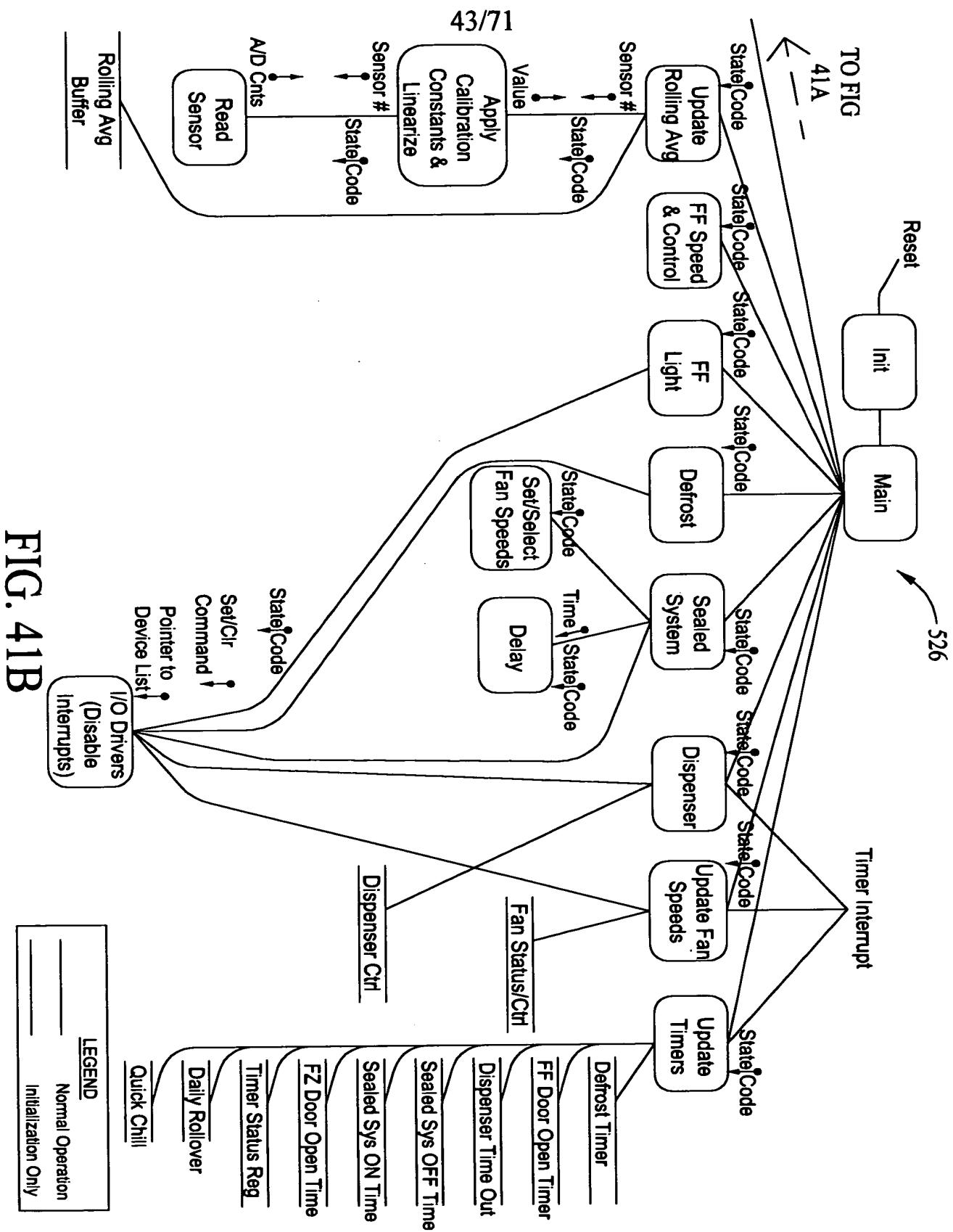


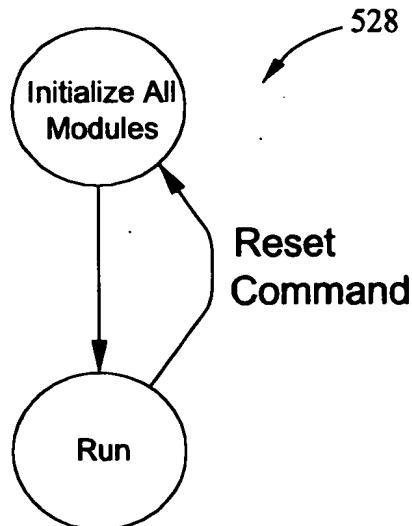
FIG. 41A

Note: Any Routine is allowed to read a data store
The command processor can read or write
any data store.

Dashed line indicates a path for initialization only



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State Diagram For Main Control

FIG. 42

HMI MAIN STATE MACHINE

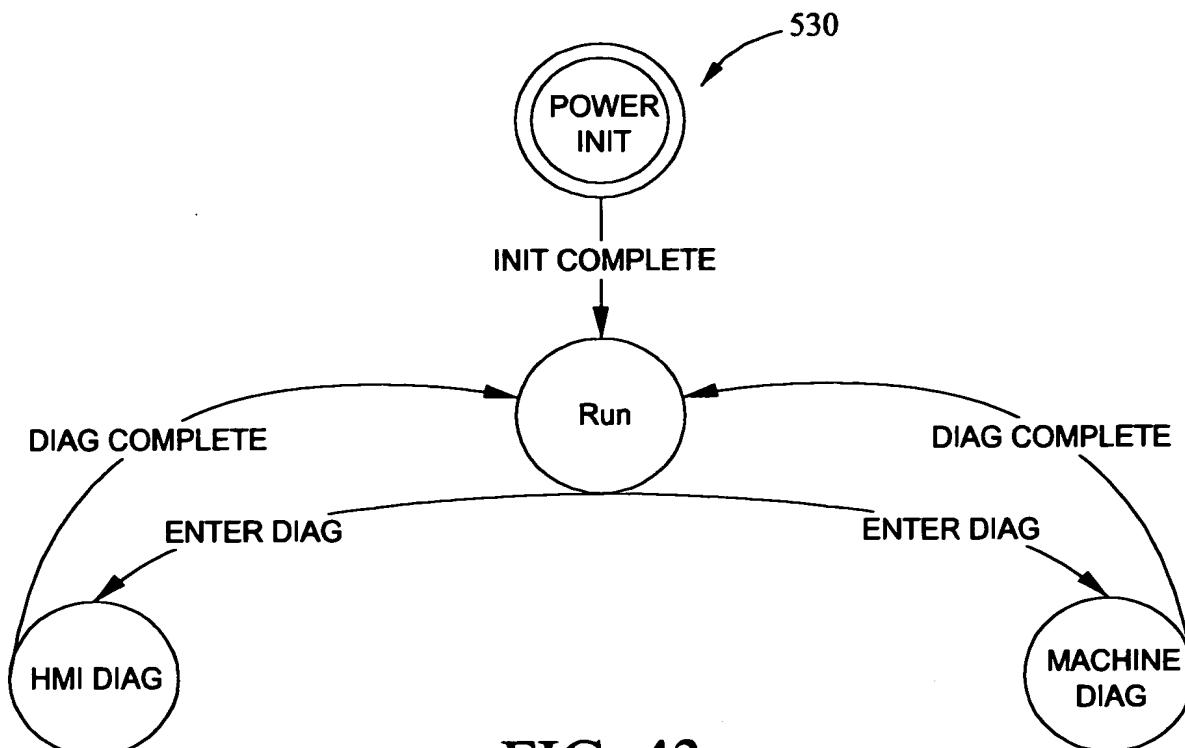


FIG. 43

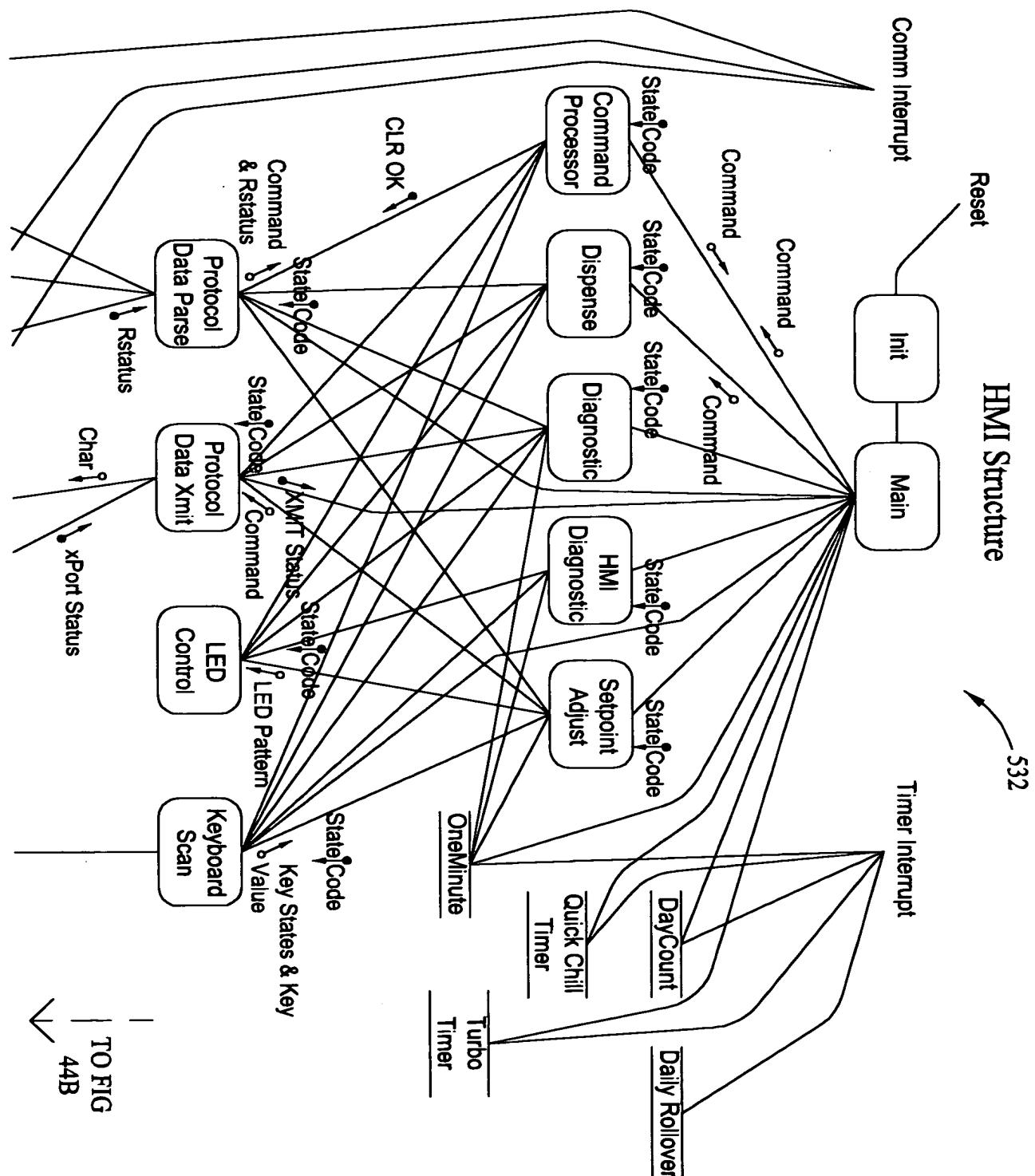
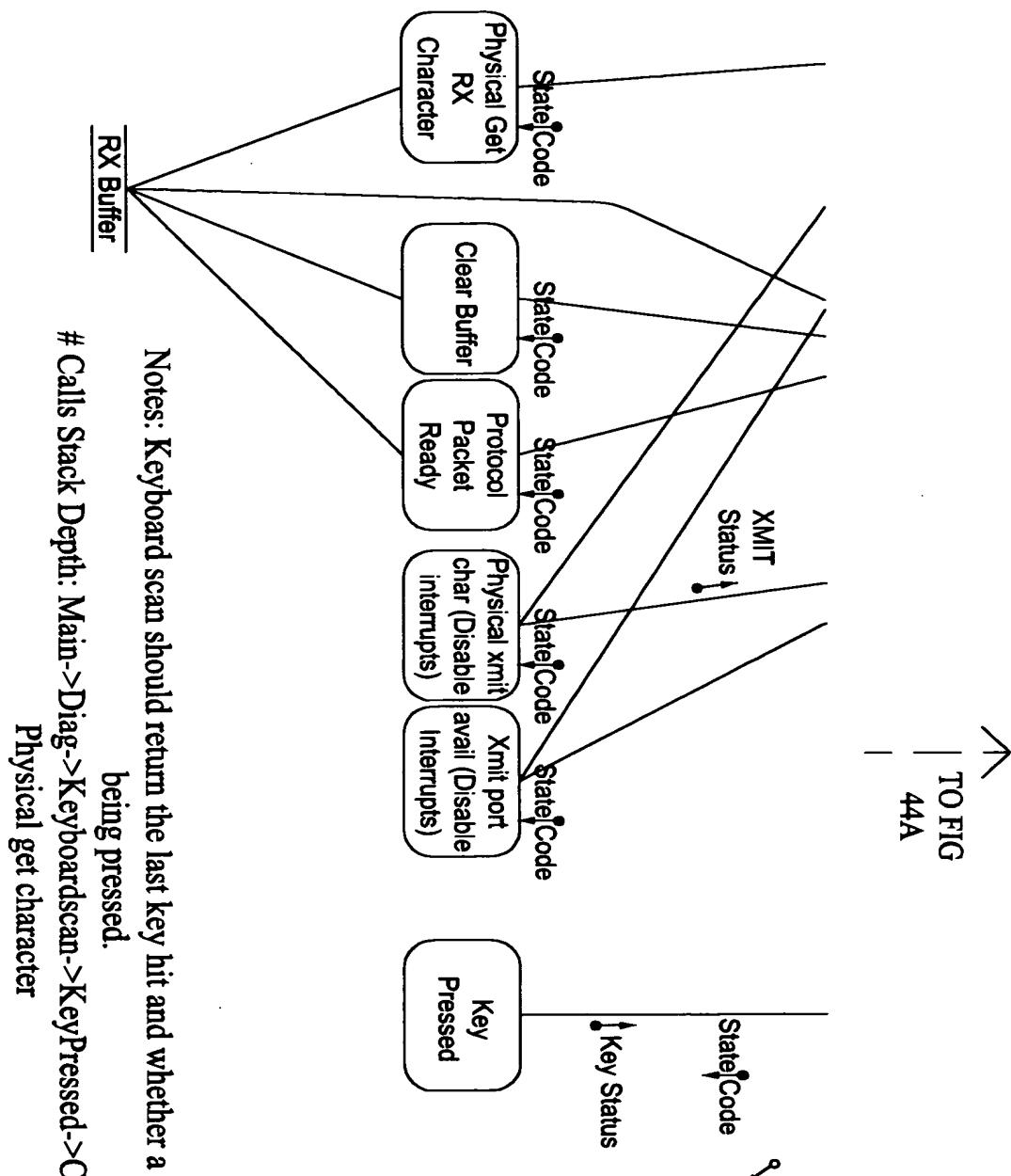


FIG. 44A

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Suite 2600, St. Louis, MO 63102 (314) 621-5070

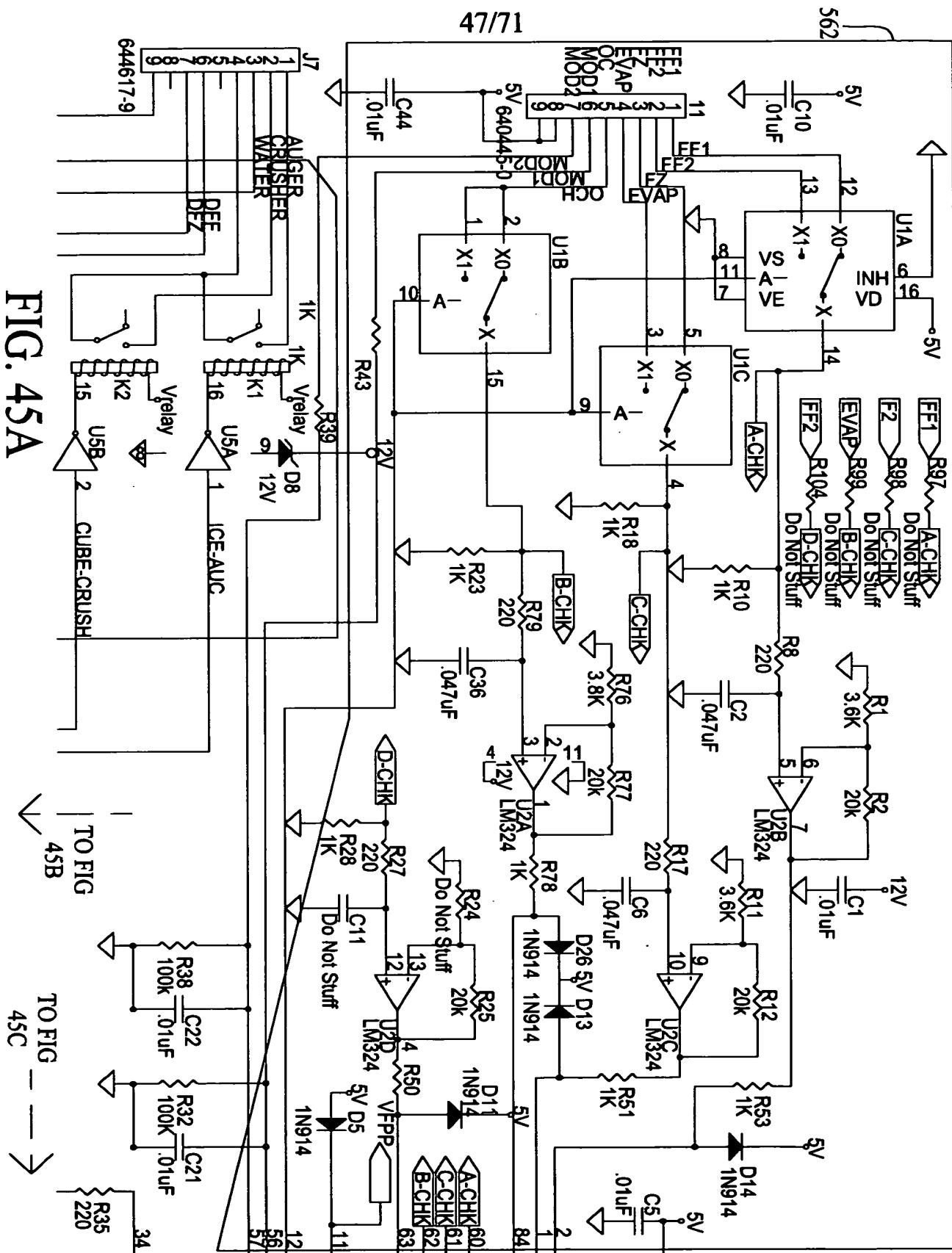
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Notes: Keyboard scan should return the last key hit and whether a key is presently being pressed.

Calls Stack Depth: Main->Diag->Keyboardscan->KeyPressed->Cccom Interrupt-> Physical get character

FIG. 44B



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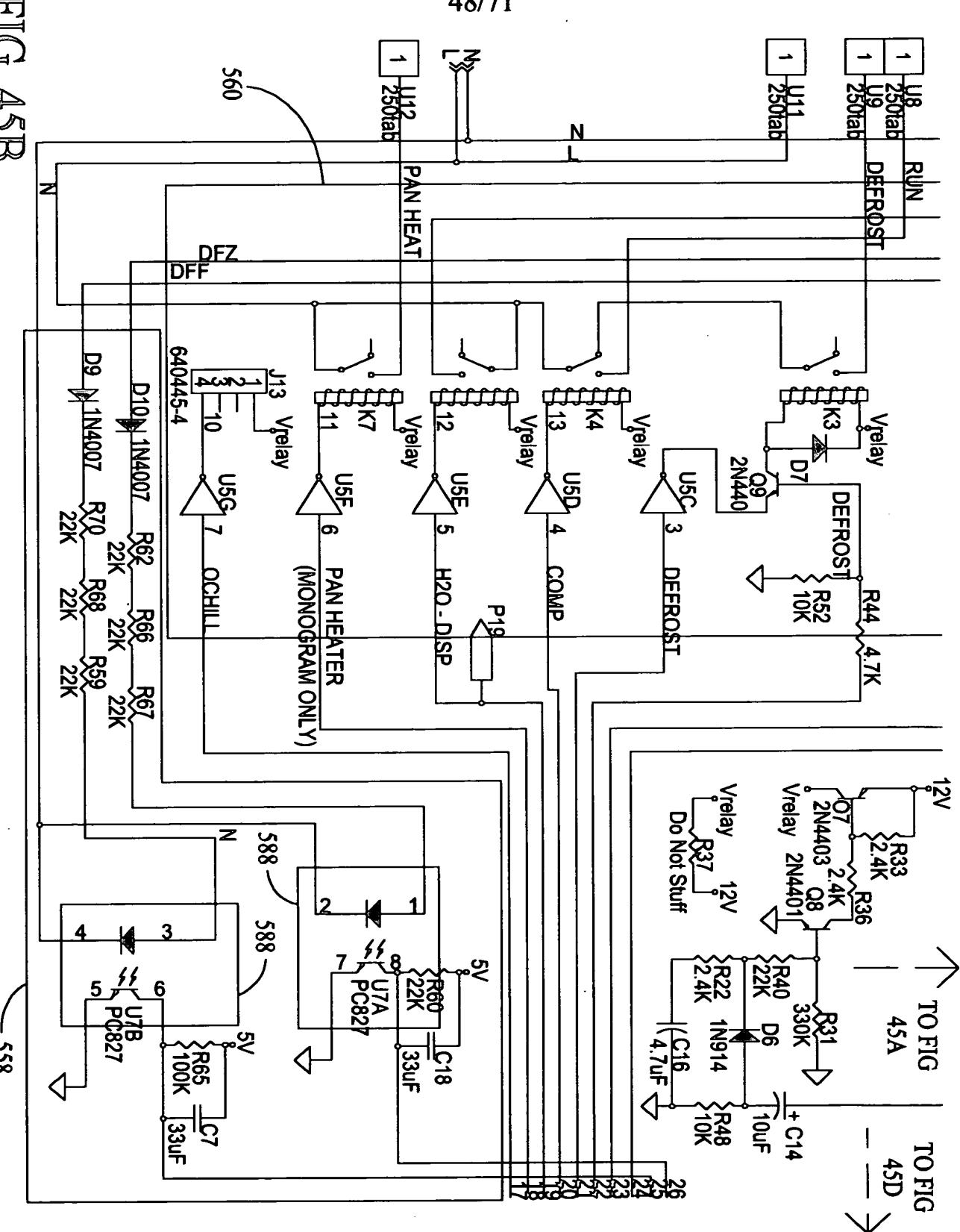
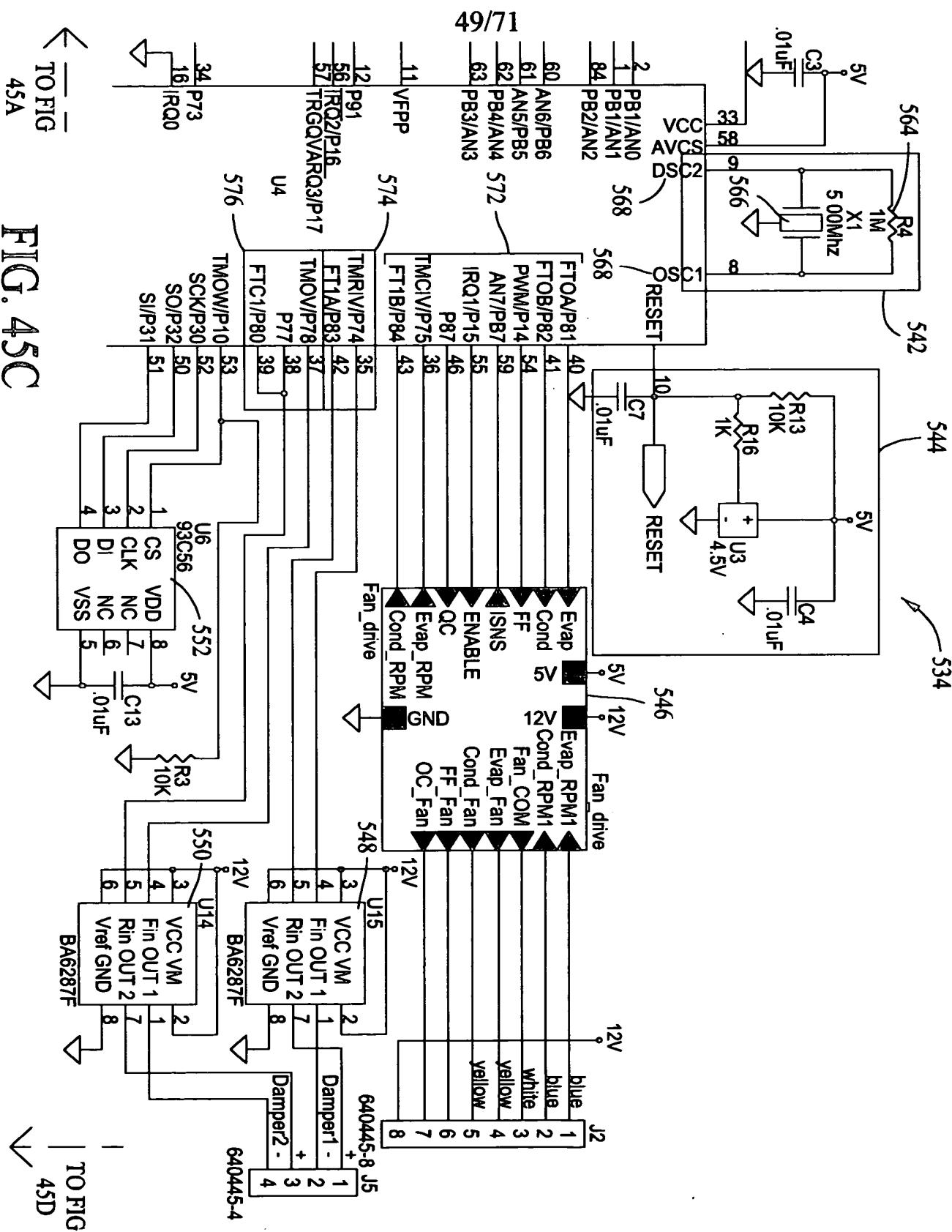
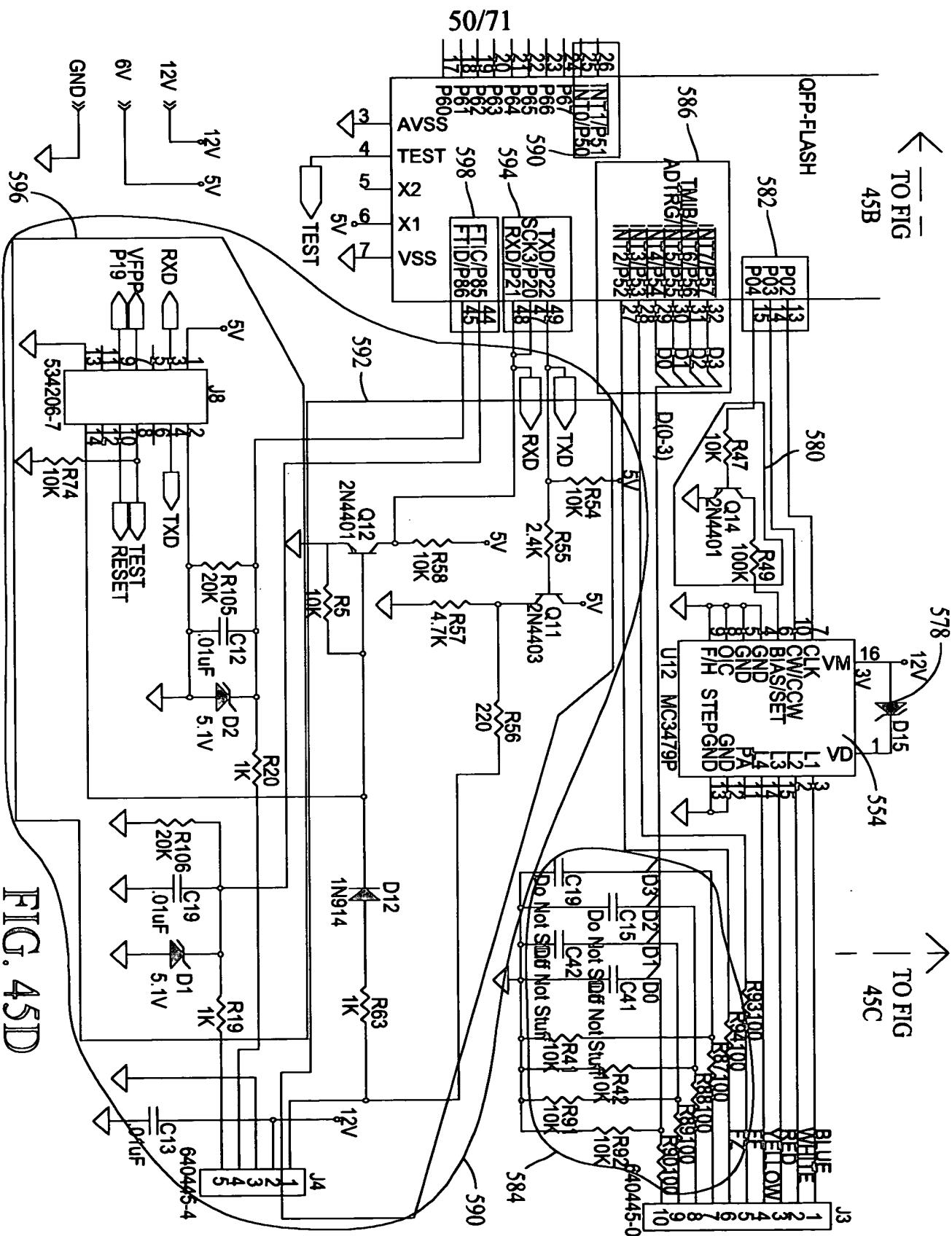


FIG. 45B





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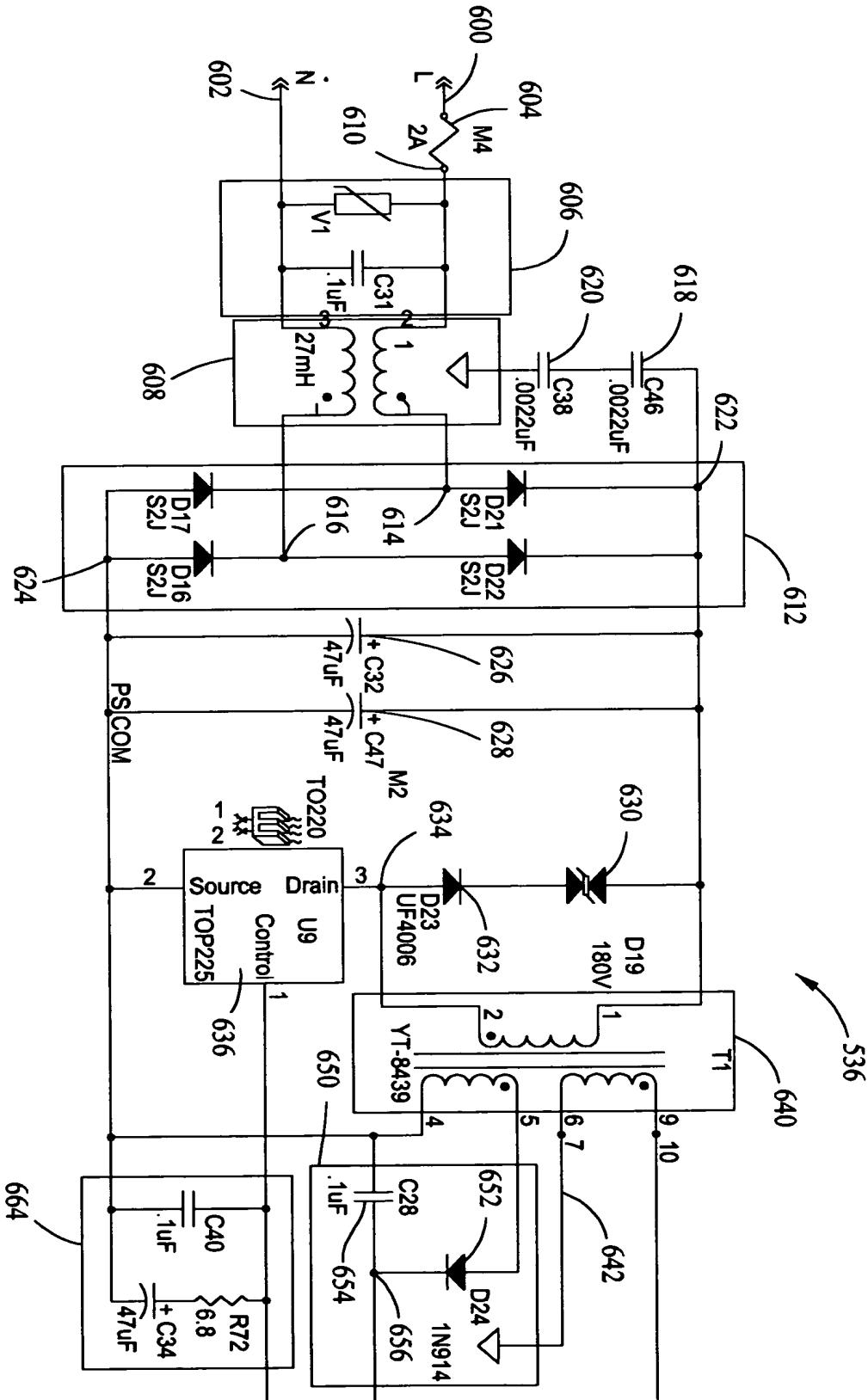
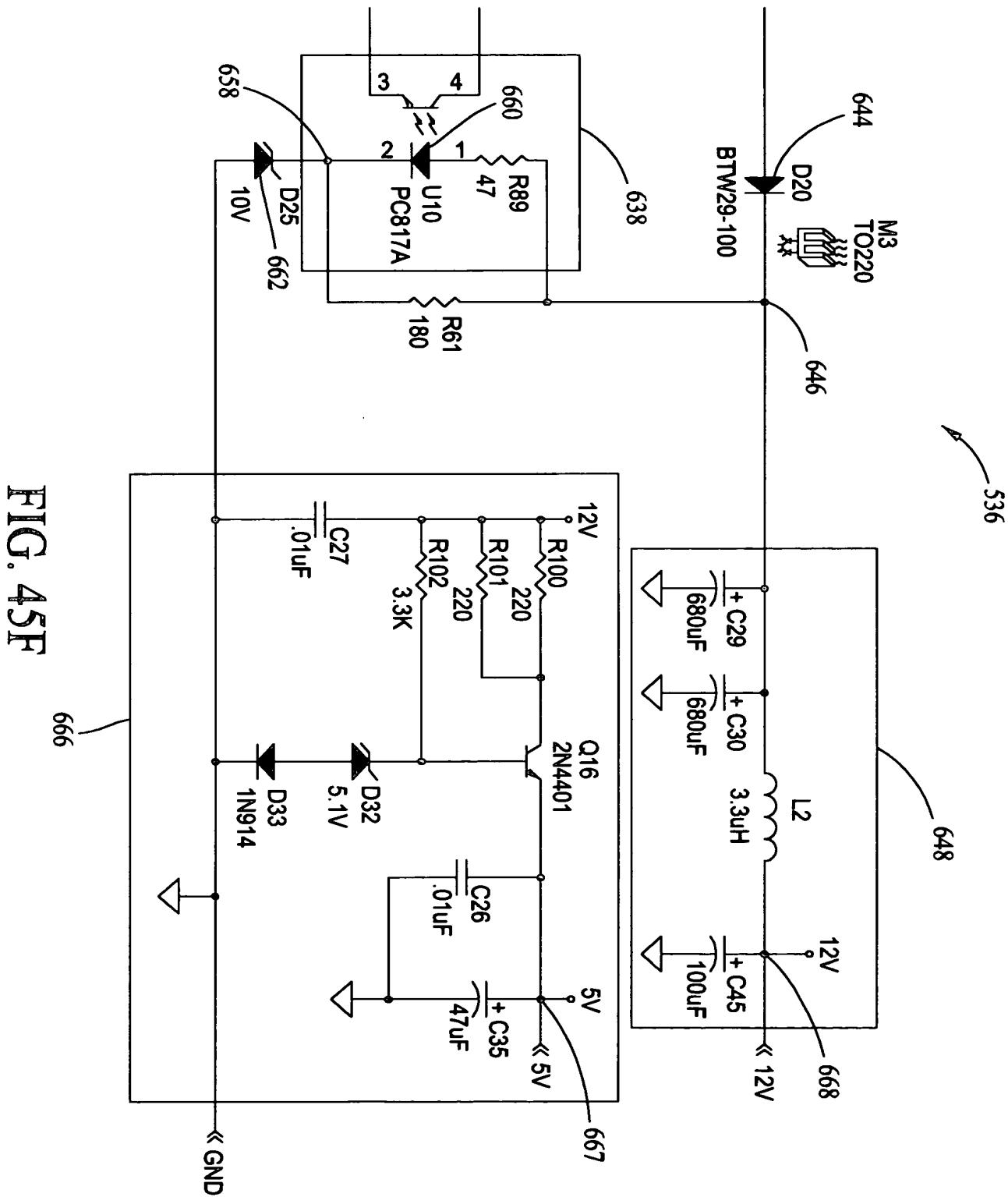
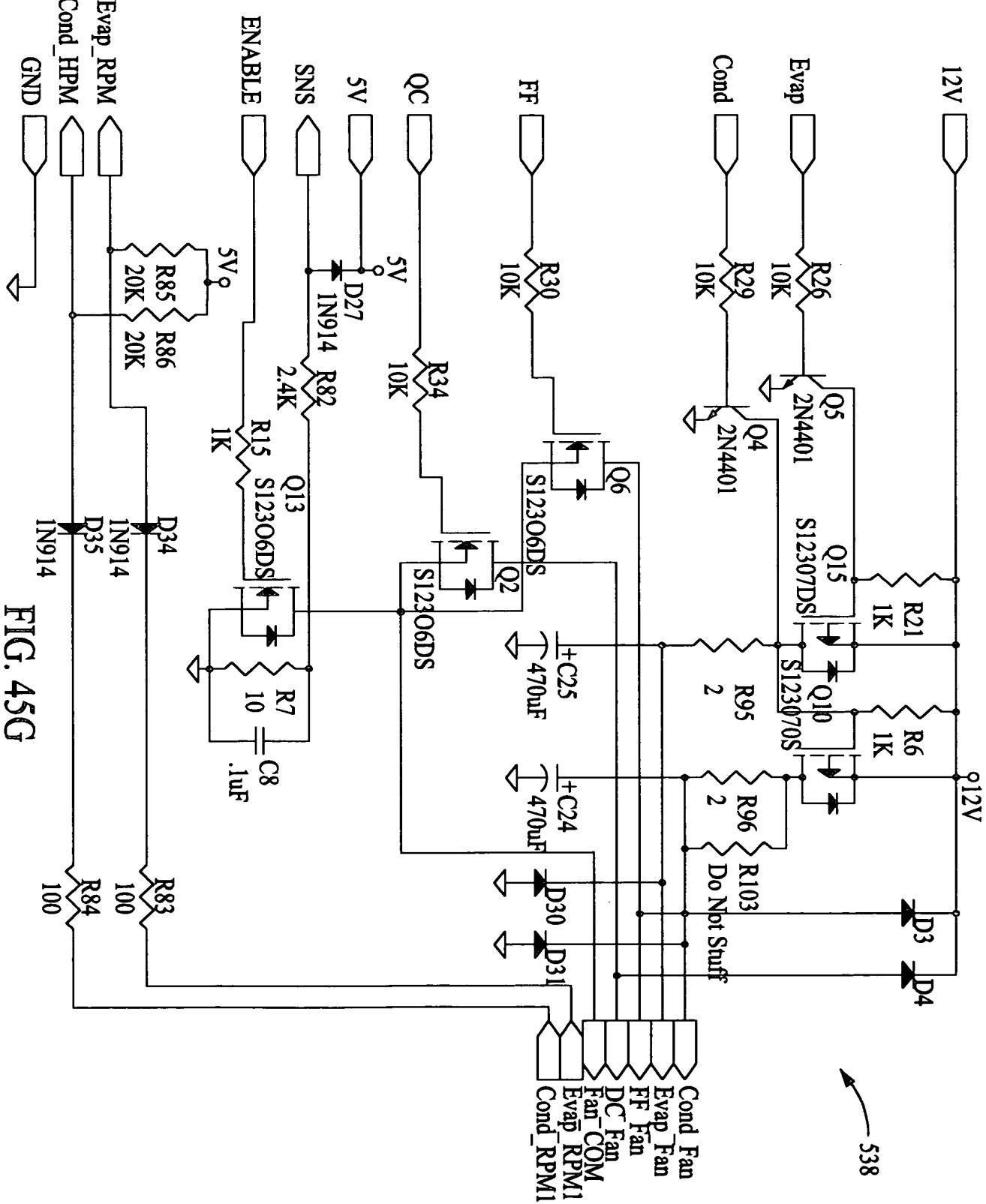


FIG. 45E

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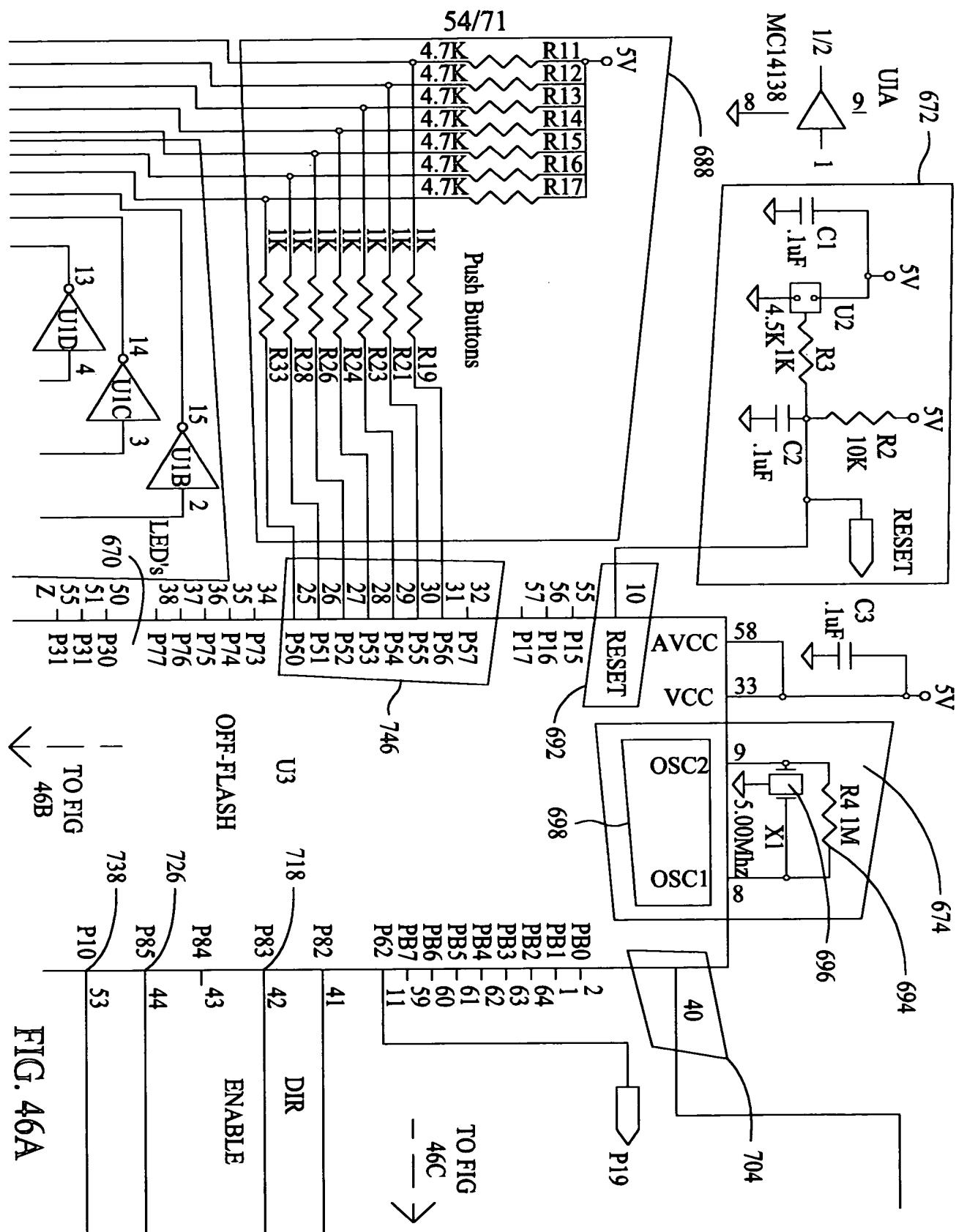
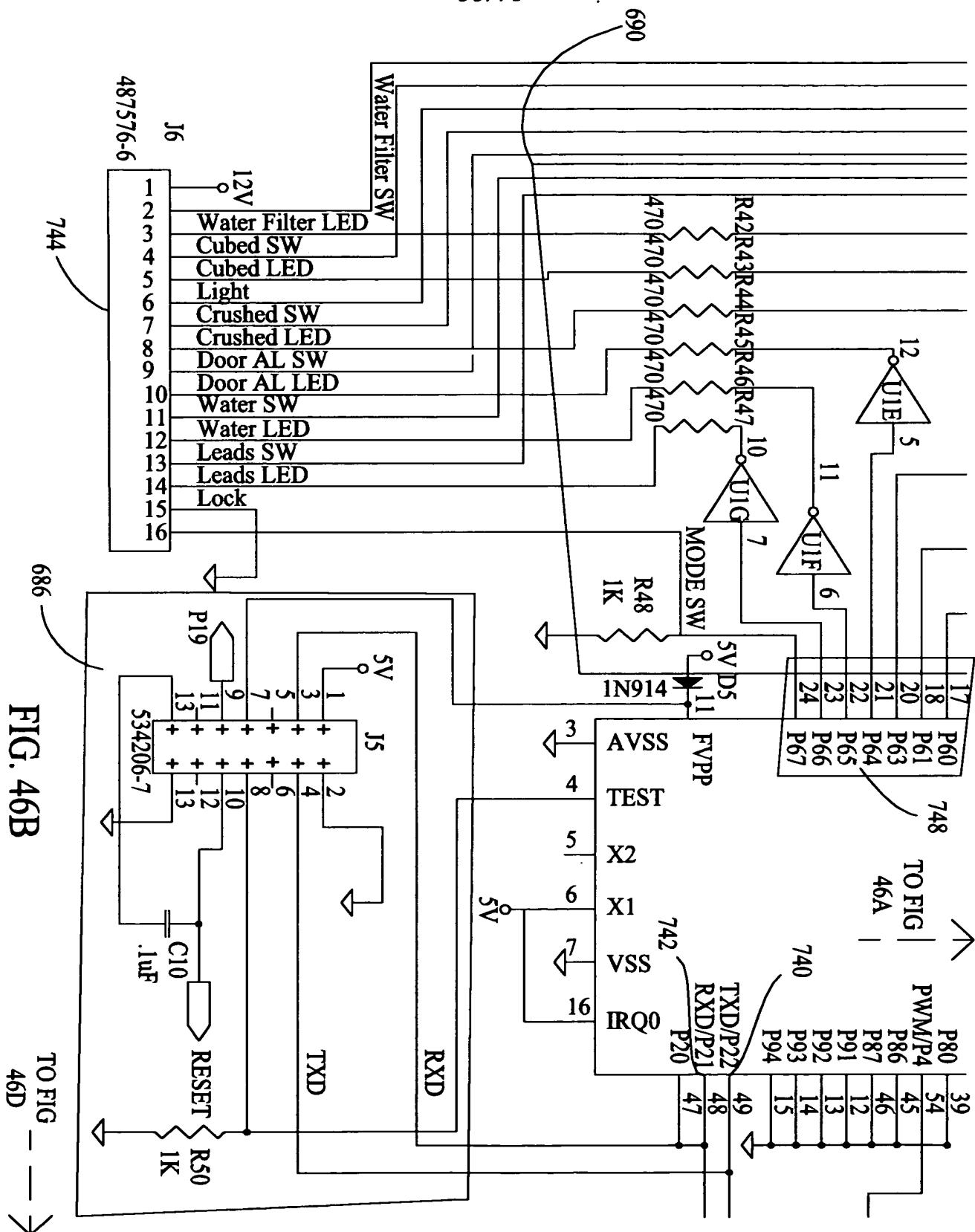
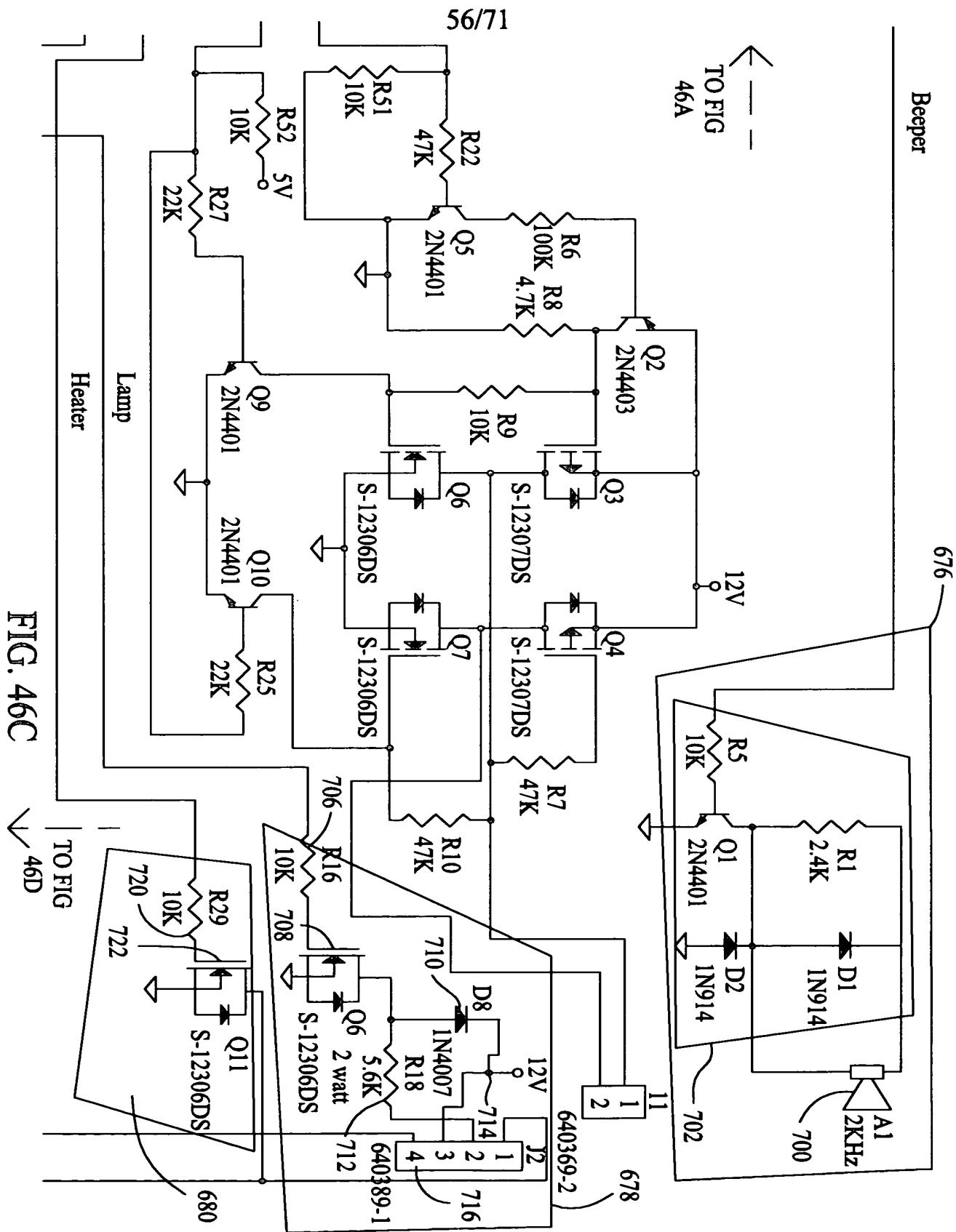


FIG. 46A

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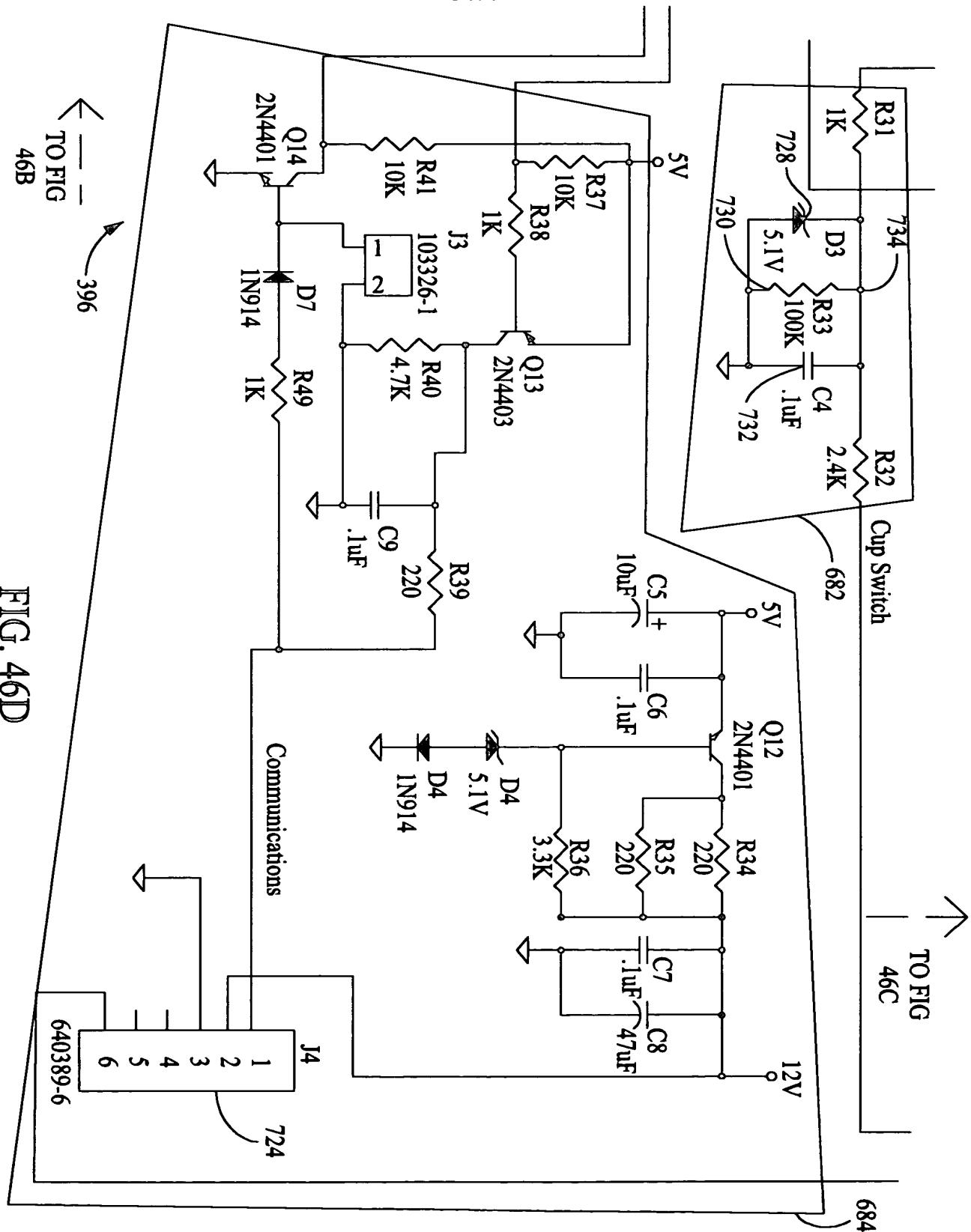


FIG. 46D

396
TO FIG

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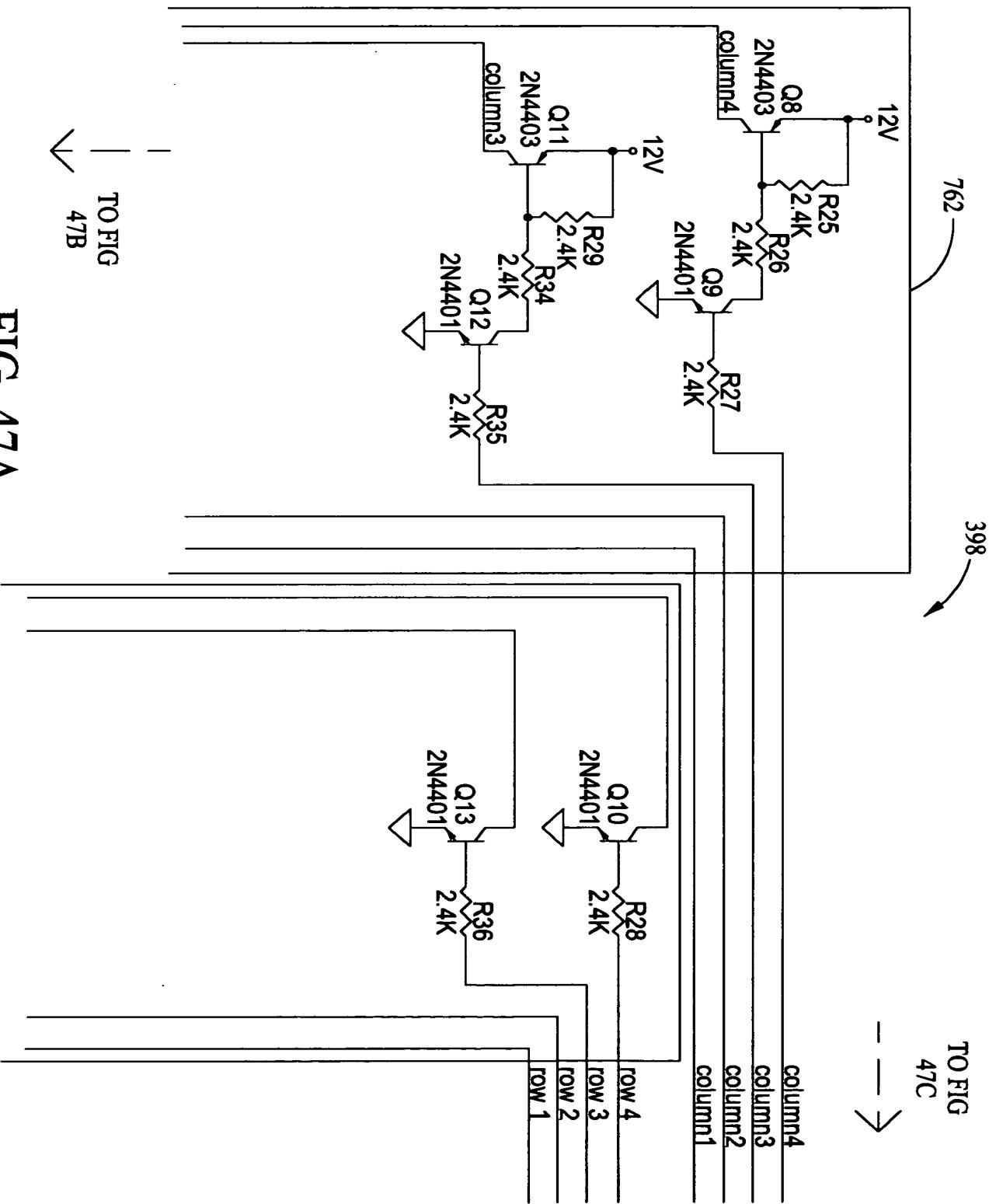


FIG. 47A

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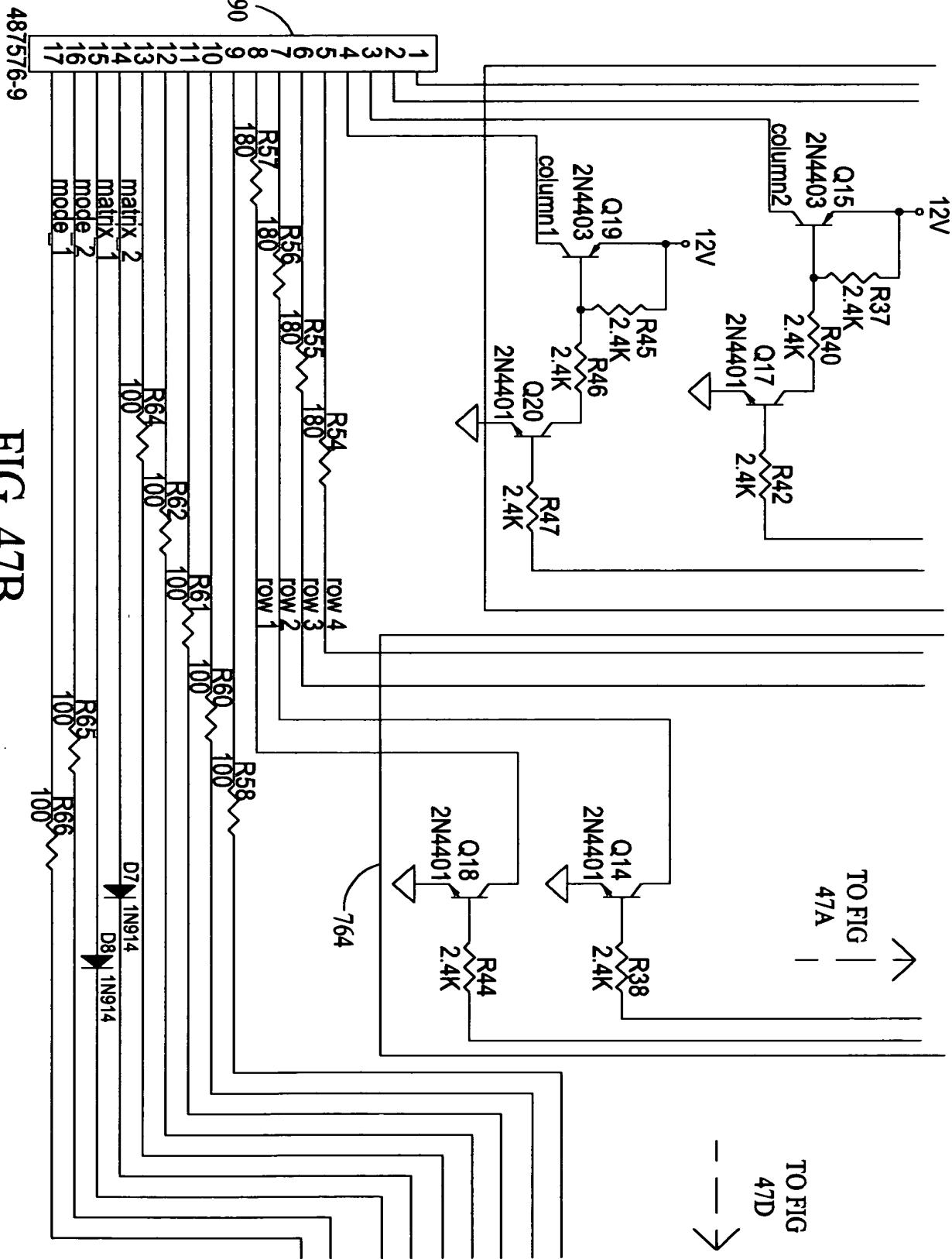


FIG. 47B

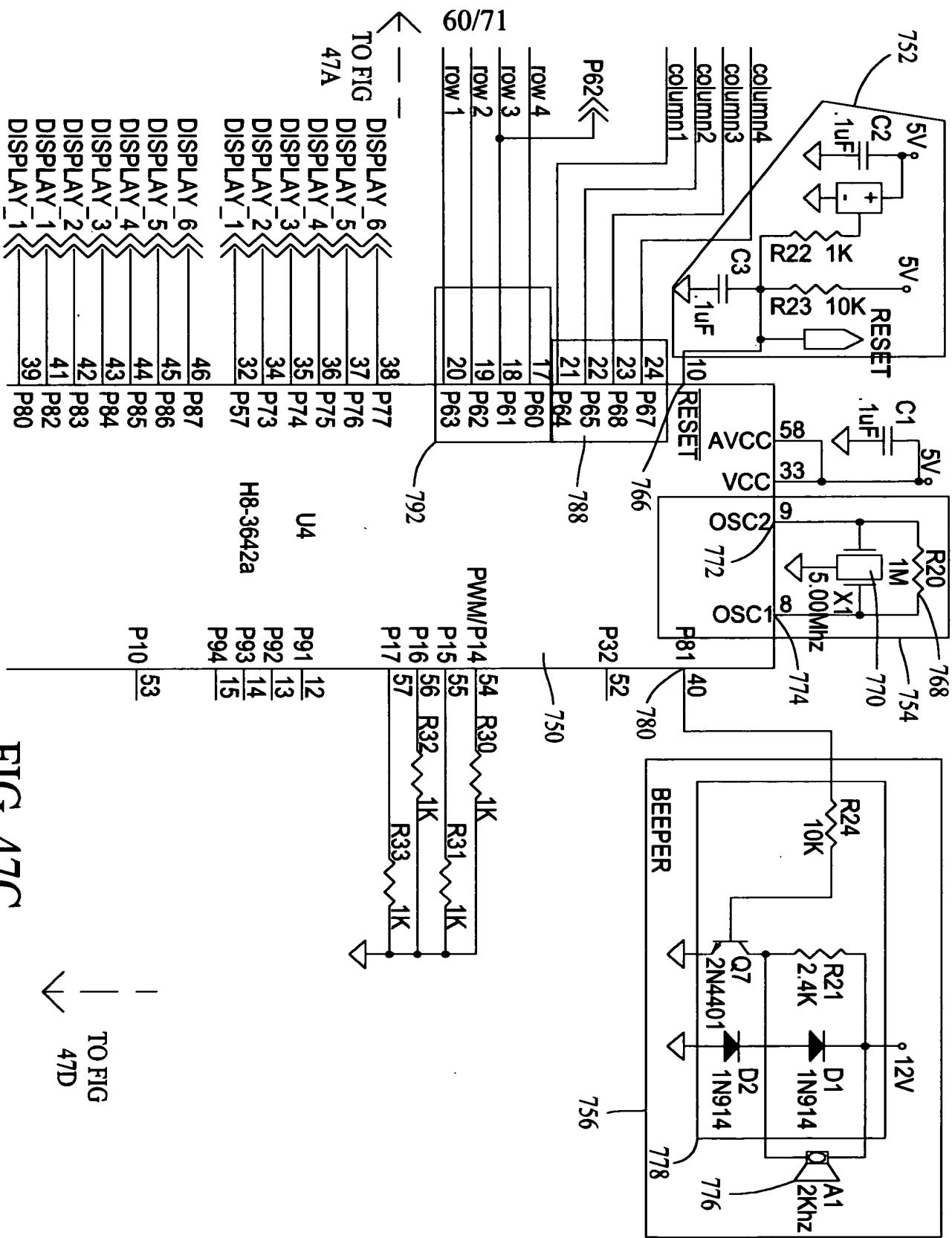
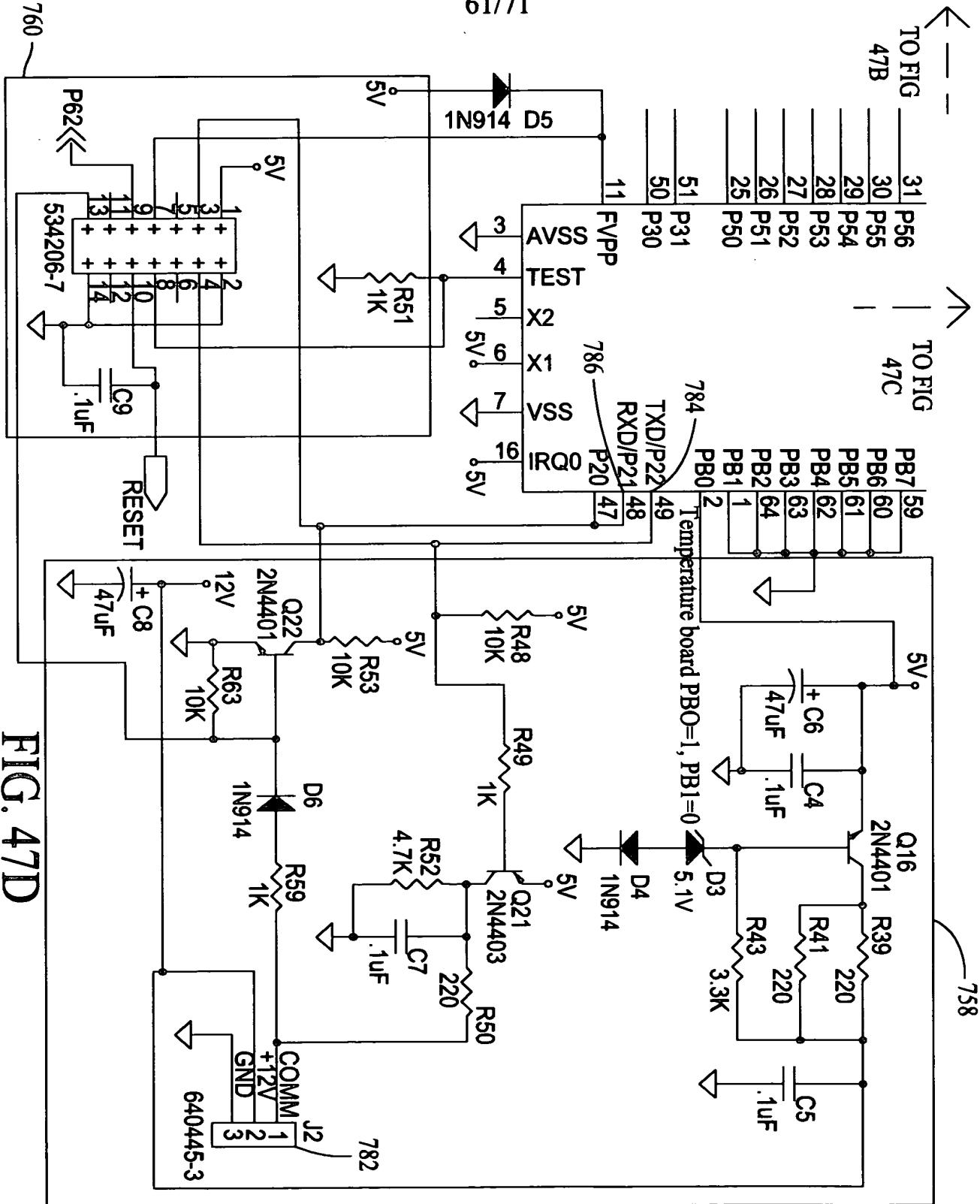


FIG. 47C

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FIG. 47D

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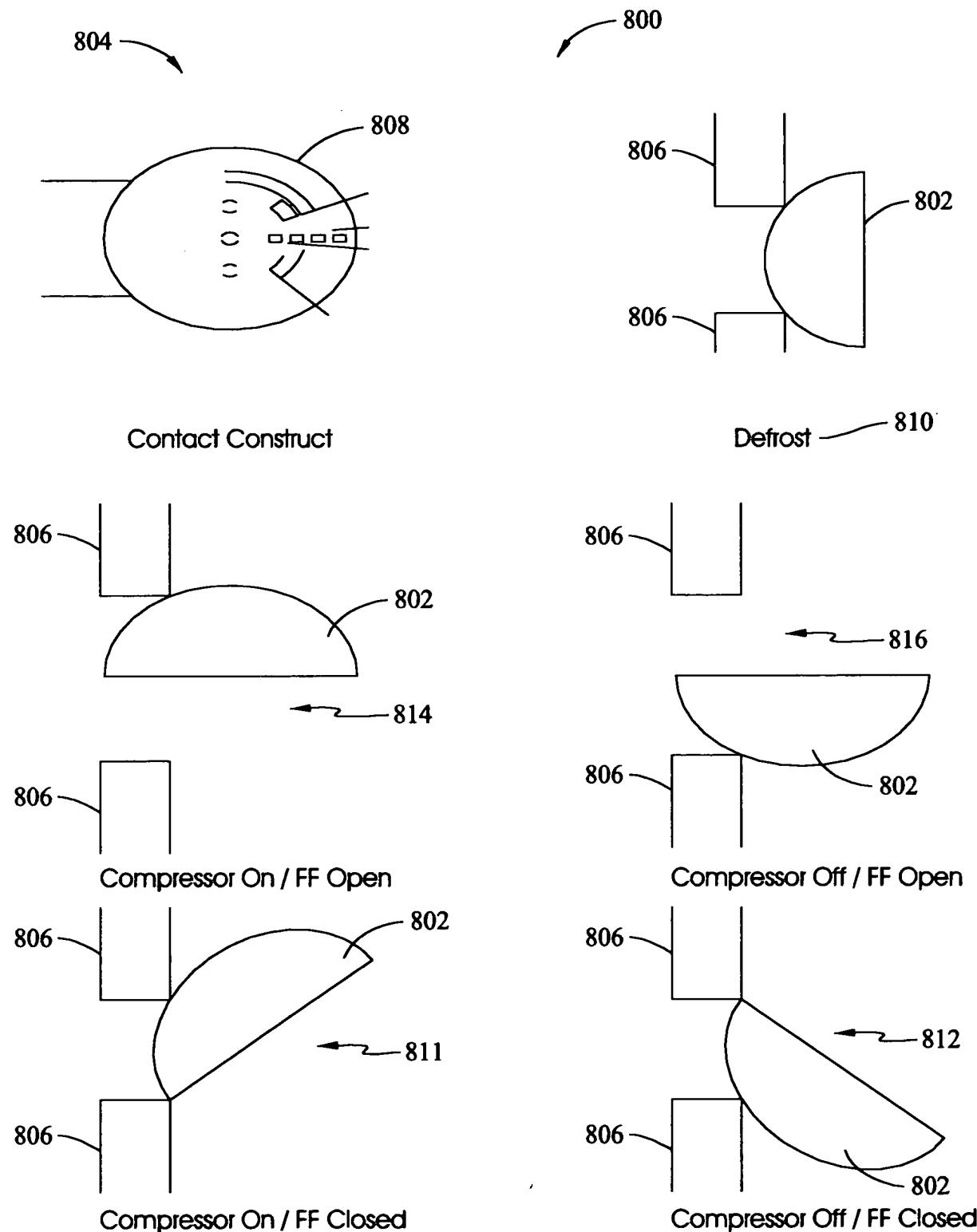


FIG. 48

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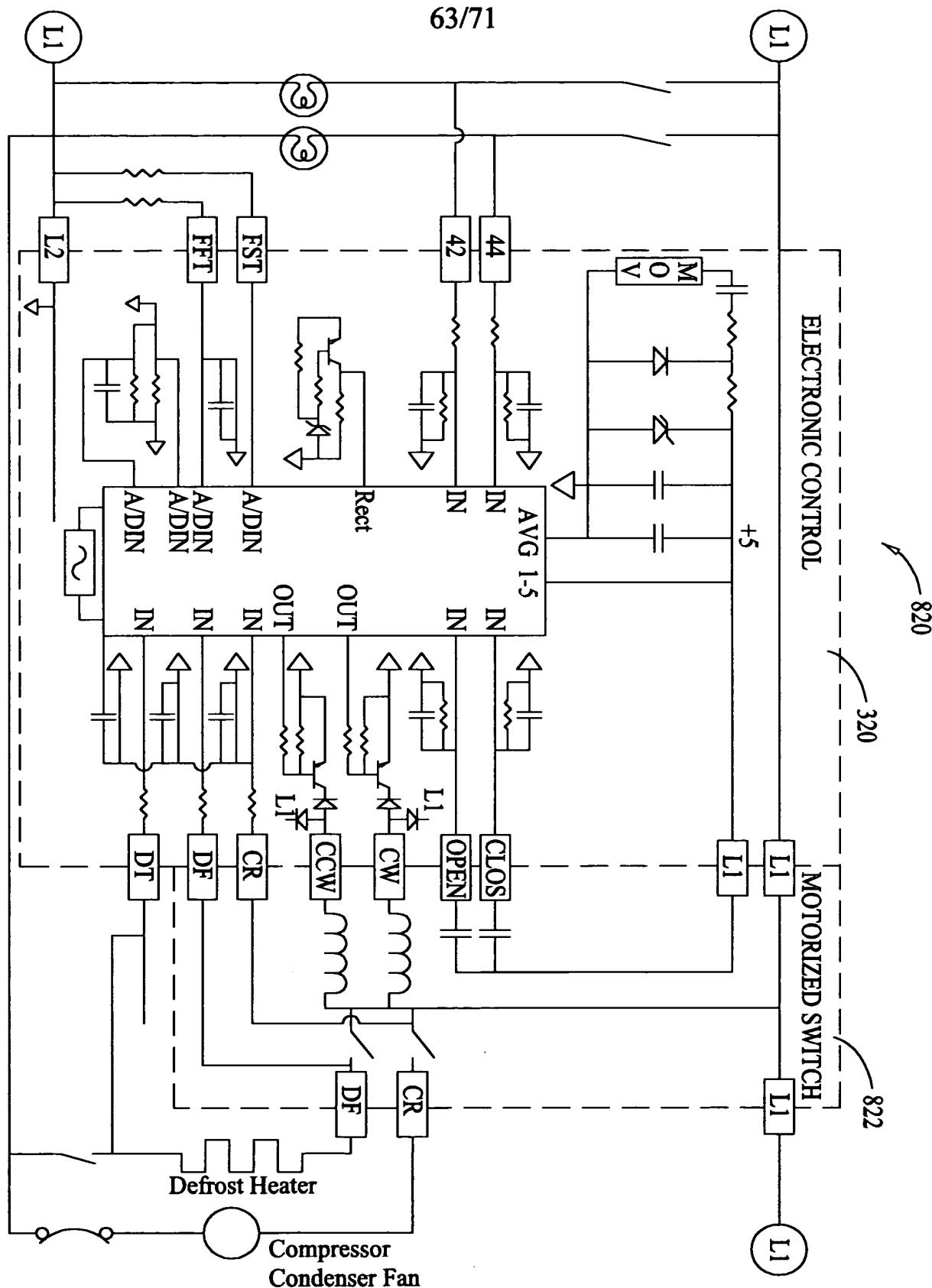


FIG. 49

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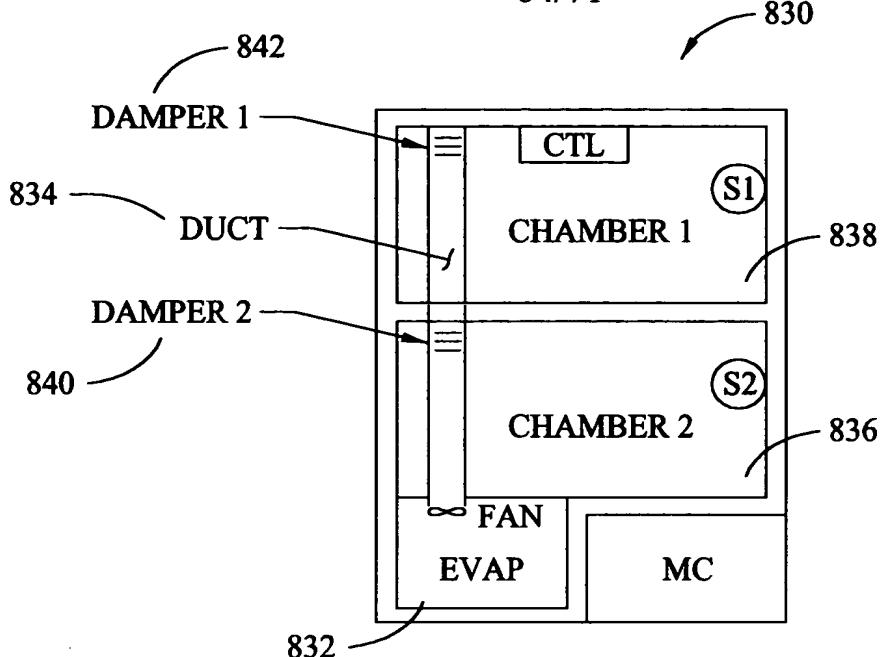


FIG. 50

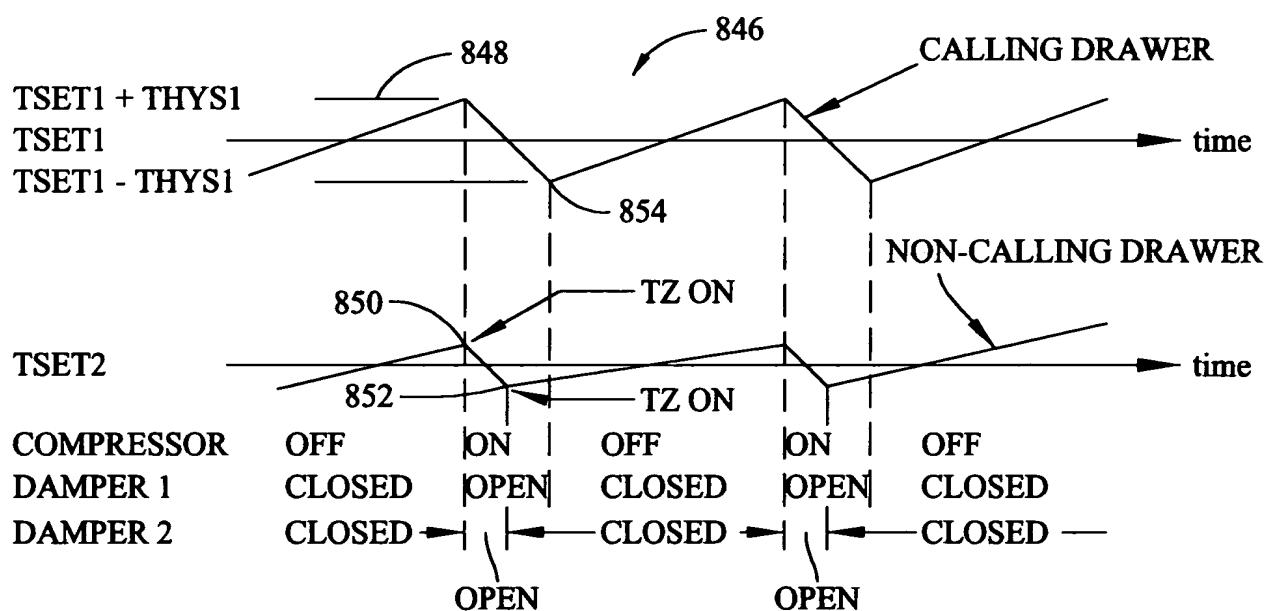


FIG. 51

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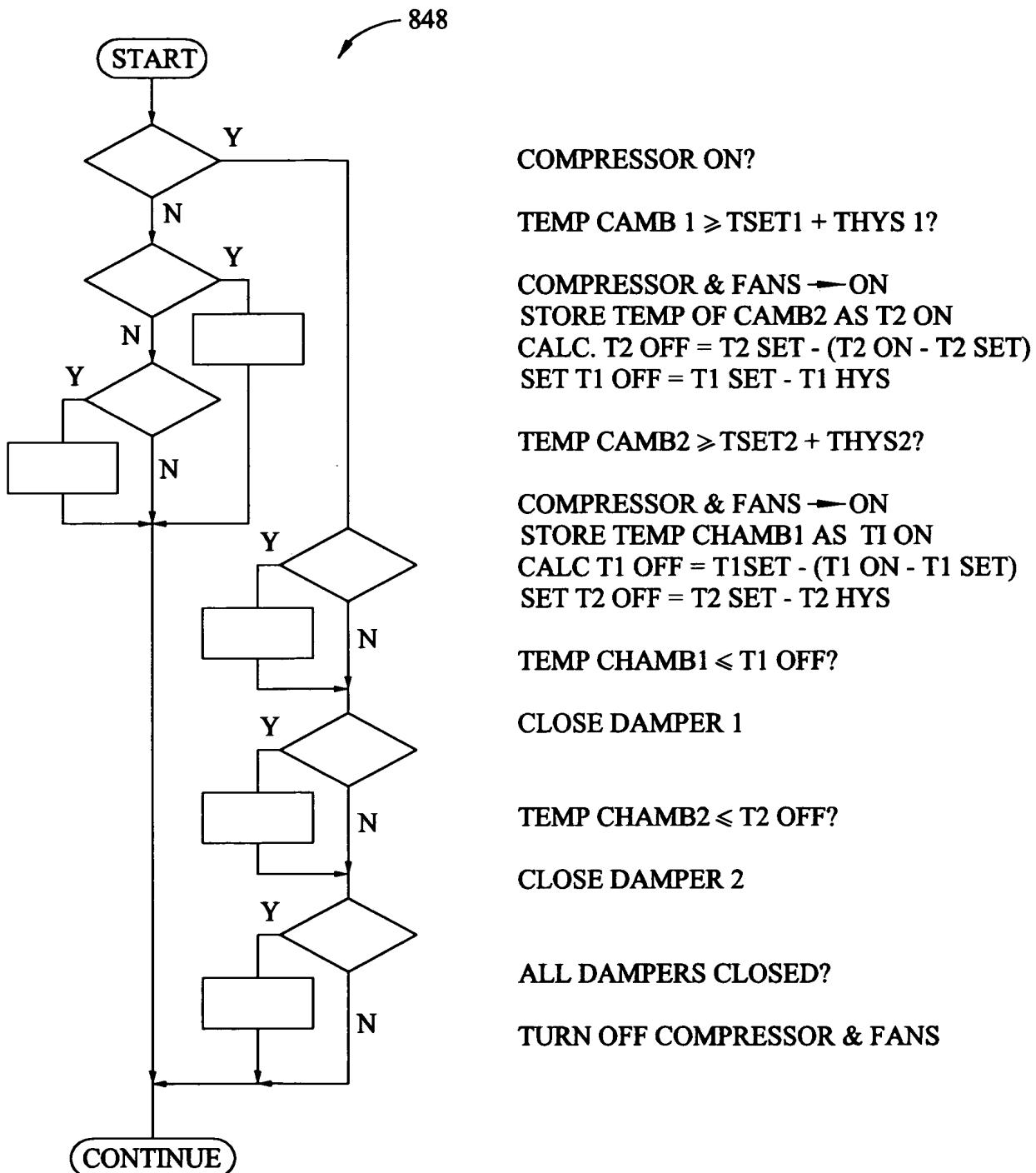


FIG. 52

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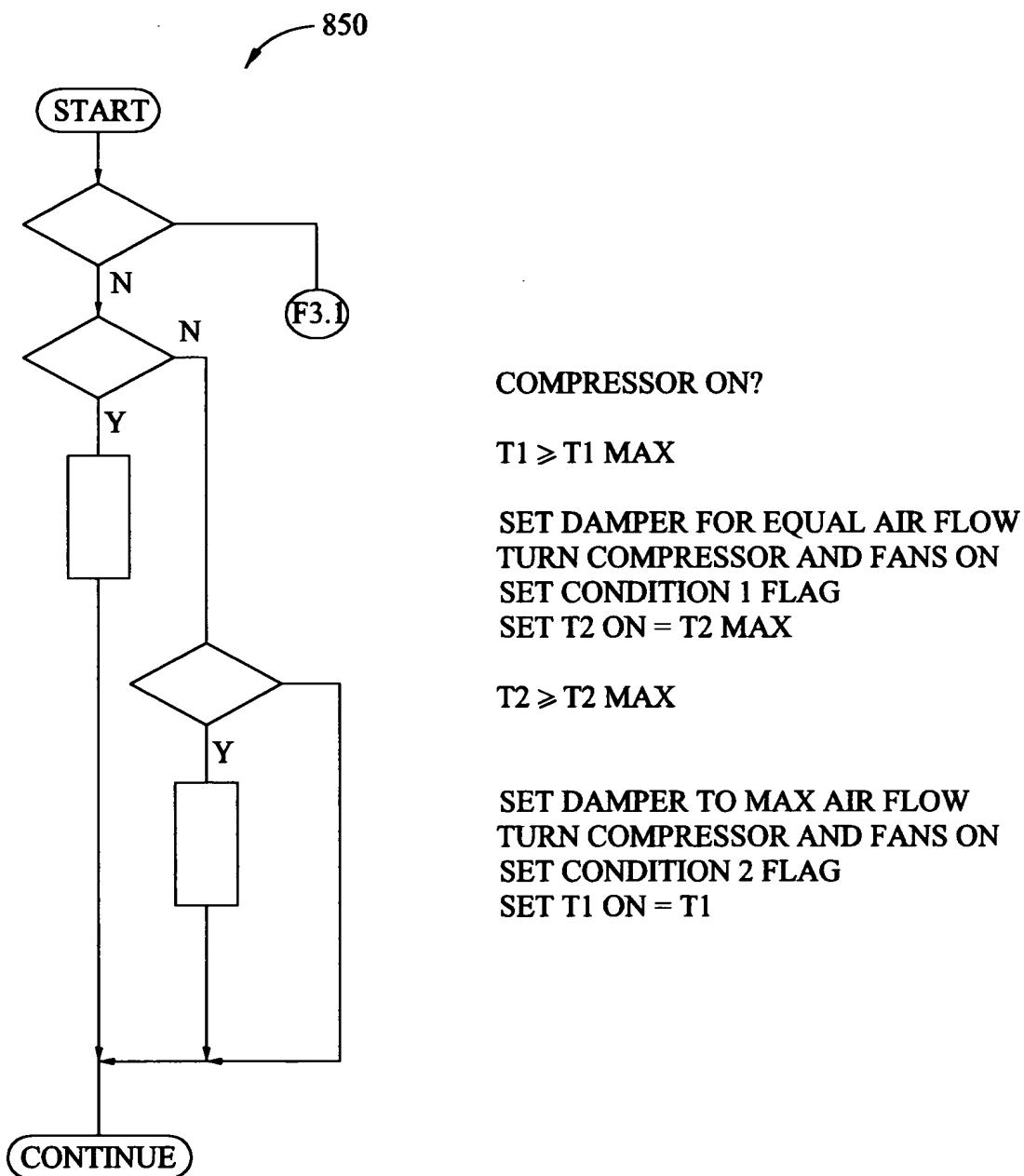
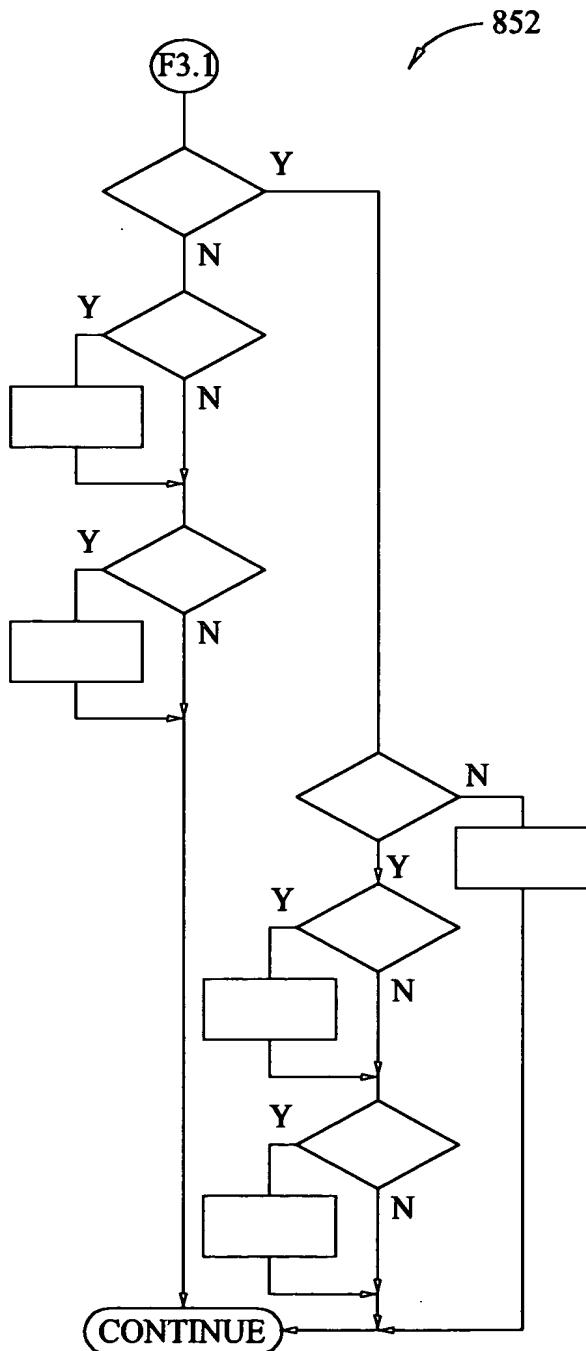


FIG. 53



CONDITION 1 FLAG SET?

T2 ≤ T2 SET - (T2 ON - T2 SET)?

CLOSE DAMPER

T1 ≤ T1 MIN?

**TURN COMPRESSOR AND FANS OFF
RESET CONDITION 1 FLAG**

CONDITION 2 FLAG SET?

ERROR - RESTART COMPUTER

T2 ≤ T2 MIN?

CLOSE DAMPER

T1 ≤ T1 SET - (T1 ON - T1 SET)?

**TURN COMPRESSOR AND FANS OFF
RESET CONDITION 2 FLAG**

FIG. 54

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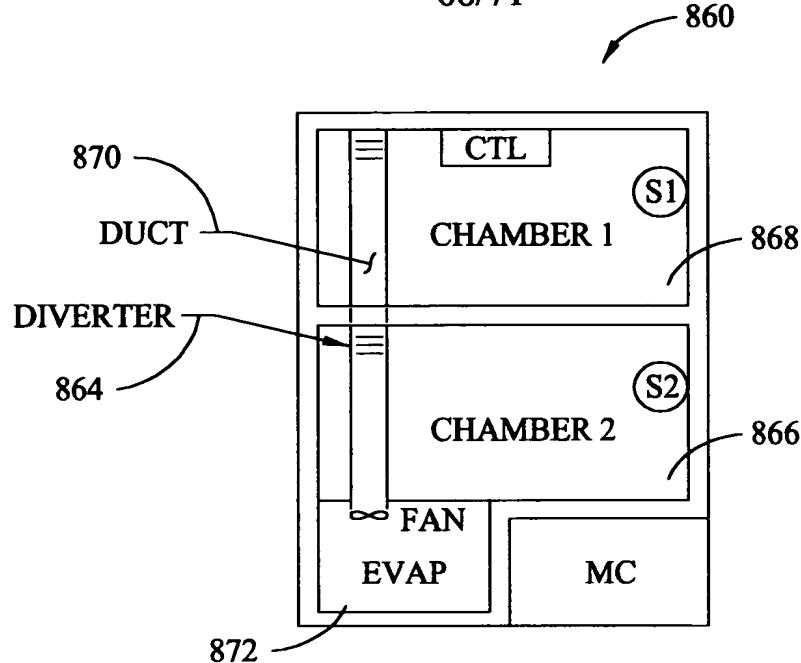


FIG. 55

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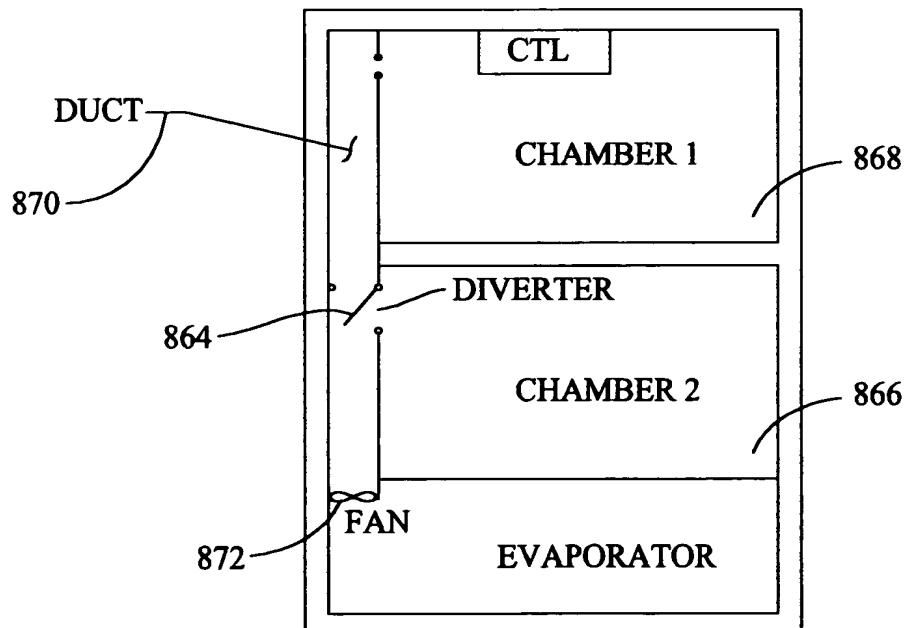


FIG. 56

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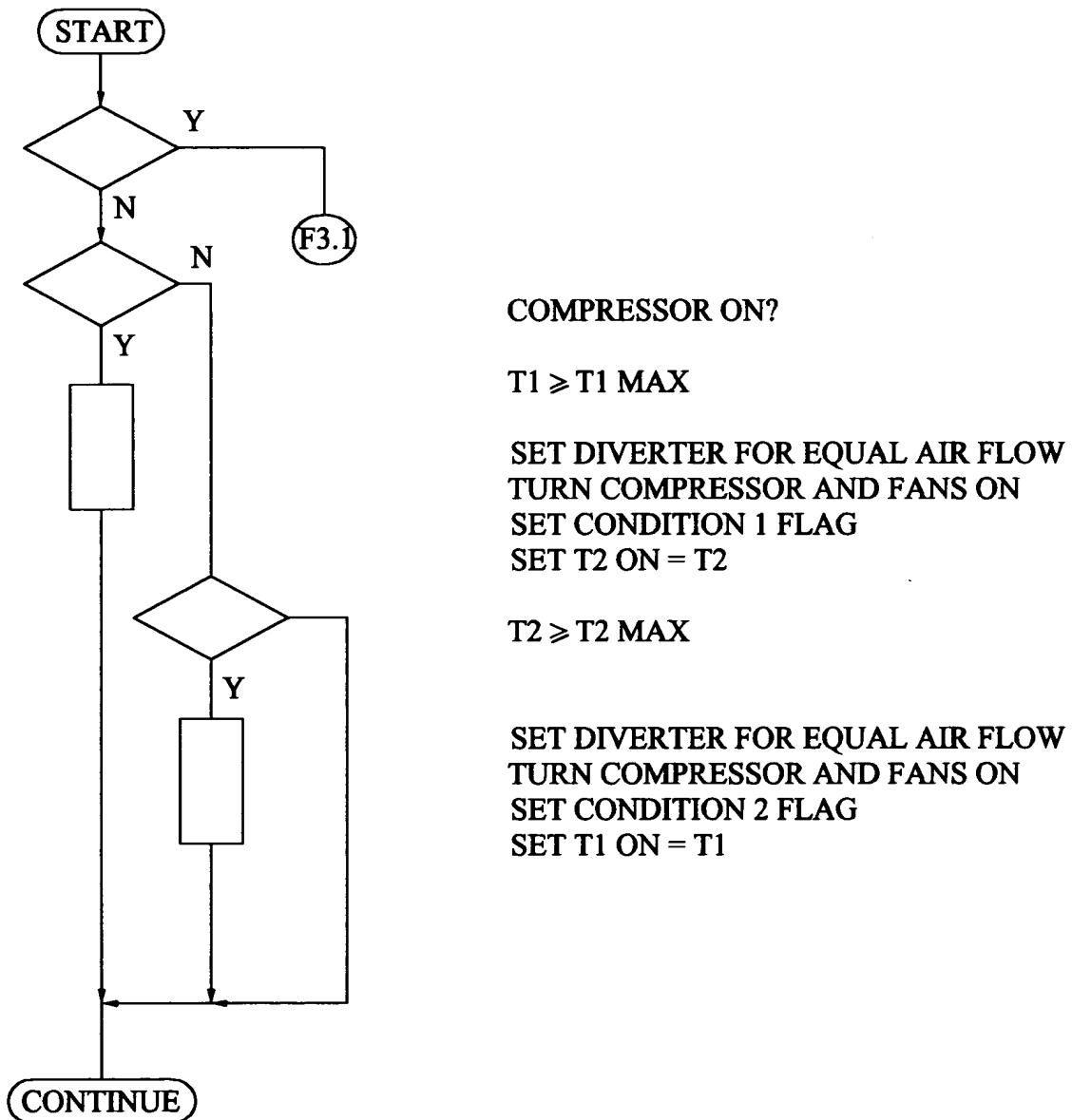
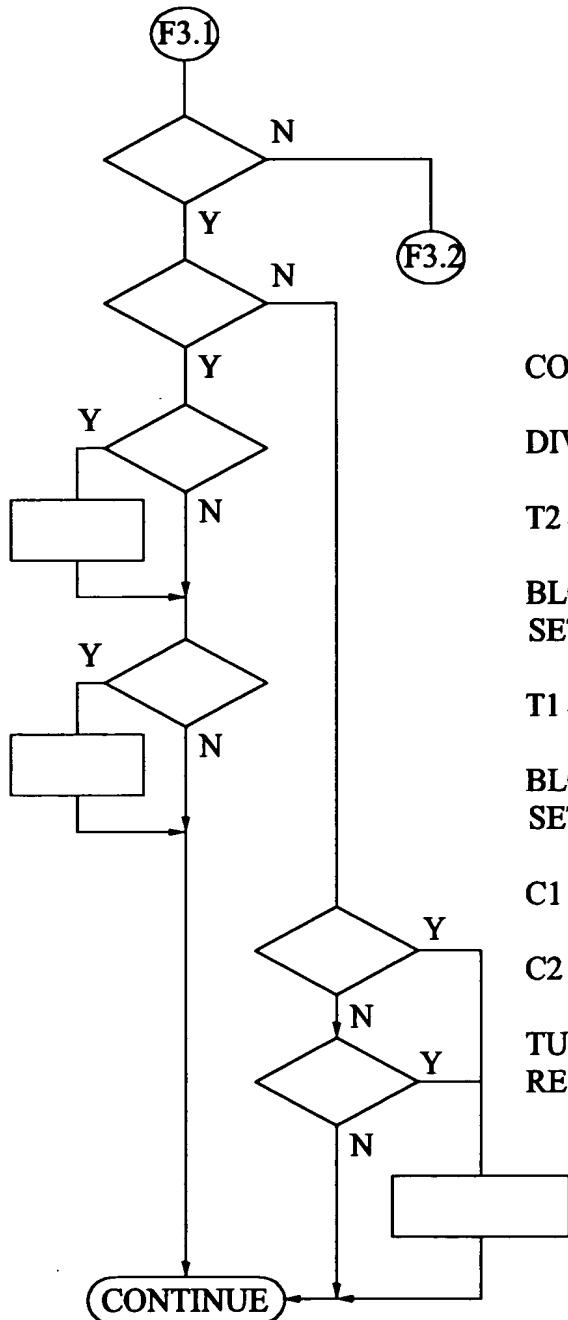


FIG. 57

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CONDITION 1 FLAG SET?

DIVERTER AT MID POSITION?

$T2 \leq T2 \text{ SET} - (T2 \text{ ON} - T2 \text{ SET})$?

BLOCK CHAMBER 2
SET C2 SAT FLAG

$T1 \leq T1 \text{ MIN}$?

BLOCK CHAMBER 1
SET C1 SAT FLAG

$C1 \text{ SAT} = \text{TRUE AND } T2 \leq T2 \text{ SET} - (T2 \text{ ON} - T2 \text{ SET})$?

$C2 \text{ SAT} = \text{TRUE AND } T1 \leq T1 \text{ MIN}$?

TURN COMPRESSOR AND FANS OFF
RESET CONDITION 1, C1 SAT AND C2 SAT FLAGS

FIG. 58

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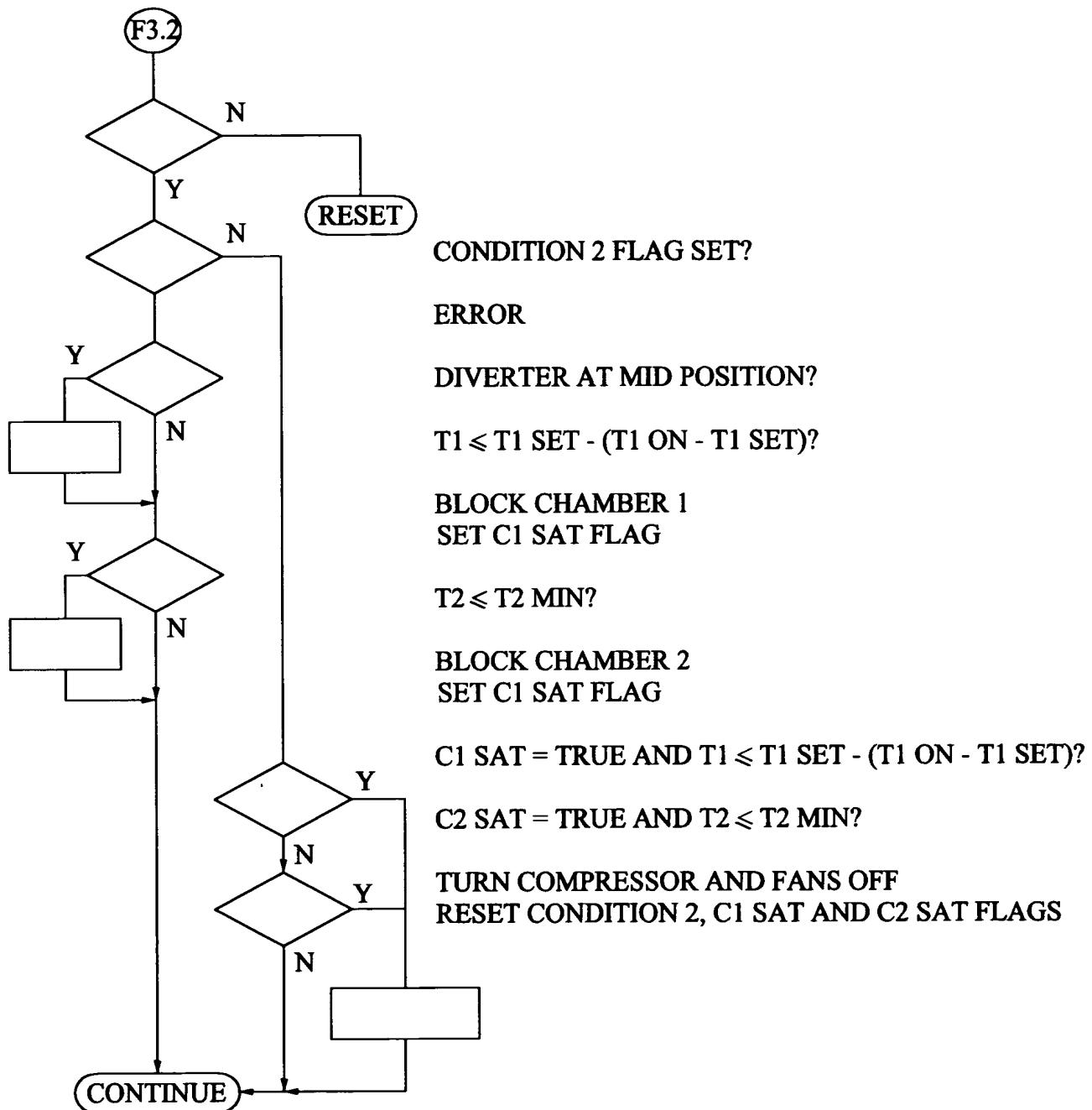


FIG. 59